DOCUMENT RESUME

ED 188 518 HE 012 790

AUTHOR Nasution, S.; Virasai, Banphot, Eds.
TITLE Higher Education and Social Commitment.
INSTITUTION Regional Inst. of Higher Education and Development, Singapore.
PUB DATE 78
NOTE 131p.; Proceedings of a regional seminar (Singapore, December 15-17, 1977).
AVAILABLE FROM Maruzen Asia Pte Ltd., 6th Floor, Block 7, Ayer Rajah Industrial State, Singapore 0513 ($7.50)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *College Role; Educational Needs; *Educational Responsibility; Health Needs; *Higher Education; Housing Needs; Hunger; Individual Needs; Nonwestern Civilization; Nutrition; Poverty; Quality of Life; *School Community Relationship; School Involvement; *Social Responsibility; *Social Services; Socioeconomic Status
IDENTIFIERS Asia (Southeast); Indonesia; Malaysia; Singapore; Thailand

ABSTRACT

The proceedings of the Regional Institute of Higher Education and Development's seminar and the meaning and implications of social commitment in higher education are reported. The welcoming address (S. Nasution) and the opening address (Y. B. Dato' Murad bin Mohd. Noor) welcome the participants and set the tone for the discussions to follow. The seminar was broken down into three categories. Part I, "The Meaning and Implications of Social Commitment in Higher Education," (Wu Teh-Yao) sets a broad base for discussion. Part II, "Socio-Economic Needs and Problems: Challenge to Higher Education in Southeast Asia," contains five papers related to higher education in Southeast Asia, using Malaysia, Singapore, Indonesia, and Thailand as focus areas. Part III, "Means and Methods of Achieving Integrated Programmes in Higher Education in Southeast Asia to Meet Basic Needs for Food," contains six papers again focusing on the areas in Part II as examples. The final section offers conclusions and recommendations. It is concluded that universities should inculcate social commitment and responsibility as well as directing meaningful involvement among students and staff in meeting social obligations. Several recommendations are made by several countries for regional and national projects. Appendices include a program of the seminar and a list of participants and observers. (IC)

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HIGHER EDUCATION AND SOCIAL COMMITMENT

Proceedings of the Regional Seminar
Held in Singapore
15-17 December 1977

Edited by

S. Nasution & Banphot Virasai

HE012790

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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Regional Institute of Higher Education and Development
Singapore
1978

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CSSDI Building
Heng Mui Keng Terrace
Singapore 5

Printed in Singapore by Photoplates Pte. Ltd.

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PREFACE

Higher education has been frequently accused in recent years of becoming *"ivory towers"*, more or less indifferent to the pressing needs and problems of society. Many universities still remain academic and discipline-oriented, pursuing pure knowledge for its own sake. But gradually and increasingly higher education is recognizing another function, i.e. social service. Social service is the conscious effort on the part of institutions of higher learning to contribute actively to the welfare of society by getting more and more interested in matters related to the basic needs of society.

Higher education is expected to be working for the good and the development of society, being responsible for the local and national community, the environment and natural resources nationally and globally to ensure a better quality of life of man. For that reason the curriculum of higher education should be relevant to society's needs and problems. Higher education should be socially committed. If not socially committed for the good of the country it is like an institution without a soul. It is this *"soul"*, this sense of responsibility, loyalty and dedication to the country and society which should permeate the actions of those who are socially committed. This sense of social commitment should be developed in lecturers as well as students, not only at university levels but also at lower levels of schooling.

With these considerations in mind, RIHED conducted a seminar in December 1977 on *"Higher Education and Social Commitment"*, the proceedings of which are published in this book. Discussions at the seminar fell under the following sub-topics:

1. The meaning and implications of social commitment in higher education.
2. Socio-economic needs and problems: challenge to higher education in Southeast Asia.
3. Means and methods of achieving integrated programmes in higher education in Southeast Asia to meet basic needs for food.
4. Conclusions and recommendations.

Following the presentation of a paper or papers a summary of the ensuing discussion is given.

The task of editing this volume was greatly facilitated by Dr. Tham Seong Chee, Senior Lecturer, Department of Malay Studies, Faculty of Arts and Social Sciences, University of Singapore, who served as rapporteur of the seminar. He deserves our thanks and appreciation for his excellent work.

We are also indebted to those who have presented papers and to all participants who have contributed their ideas during the discussions. The tireless efforts put by RIHED's staff in the preparation and organisation of the seminar are also worth note taking.

Finally, we gratefully acknowledge the generous financial contributions given by the following foundations/organisations to partly cover the costs of holding the seminar and printing of the proceedings:

1. Bridgestone Singapore Co. (Pte.) Ltd.
2. Cold Storage (S) Pte. Ltd.
3. Lee Foundation
4. Overseas-Chinese Banking Corporation
5. Shell Eastern Petroleum (Pte.) Ltd.

We are confident that this volume will be of some value to readers who are interested in higher education and development.

July 1978

S. Nasution
Director, RIHED

WELCOMING ADDRESS BY DR. S. NASUTION DIRECTOR, RIHED

It is indeed a privilege and a pleasure to extend my warmest welcome to all of you, on behalf of RIHED, and to thank you for being present at this Seminar in spite of your other commitments. The topic which will be discussed during these three days is "Higher Education and Social Commitment". The subject matter is relevant to RIHED's purpose which concerns with the enhancement of the contributions of higer education to the social and economic development of the countries of the region and of the region as a whole. Prominent scholars and government officials as well as representatives of regional and international organizations are invited to discuss this problem from different angles in its various aspects. No problem seems to be simple and what is considered to be simple often turns out to consist of many complexities.

The function of the university itself, to begin with, poses a crucial problem. This is related to the variety of functions that people wish the university to assume, such as:

- — the university as a place to pursue knowledge for seeking the truth, wherever it may lead, unmindful of the consequences
- — the university as an instrument for promotion of economic development, and as means for manpower development
- — the university as an agency for nation building especially in newly independent countries with ethnic, religious and cultural diversities
- — the university as the transmitter and renovator of culture
- — the university as a means for stimulating self-realization to make man become man
- — the university as a social service agency

The topic of this Seminar, "Higher Education and Social Commitment" presupposes a certain concept of the function of higher education. We believe that the university does not have one, but various tasks to perform, and that one function should not necessarily exclude other functions. The freedom to pursue knowledge and to seek truth will always be needed in every society, if the quality of its intellectual and moral life is to be maintained. But in recent years a greater emphasis has been placed upon obligation of the university to perform public service, although neither the college nor the university has ever been a totally isolated "ivory tower", completely devoid of social concerns.

Universities should not be "deaf to the cry of suffering humanity" or "exclusive and shut up within themselves". "Through education, . . . man need not be forever poor, . . . science and technology, economics and politics make it possible for the first time in human history for the benefits of civilization, such as they are, to be available to the whole human race — to all men. That is the giant revolutionary fact of our time which education is making manifest".

That university has an obligation for public service is no longer in question. The points at issue are the ways in which it is appropriate for the university to serve society. Should the university serve as an instrument of direct social action or should the university serve the needs of society in more indirect ways? There are many instances in which students and staff are directly involved in community development, making academic courses more meaningful through social services. On the

other hand, there is doubt, whether it is the fact that when there is an unmet need, the university is best equipped to take it on. Even if it is, the added function may place such a burden upon an institution as to defeat its basic purposes.

Social and economic development is certainly not the sole responsibility of higher education, but of the society as a whole, that is, including the government, the private sector, the university staff, students, and the community itself. Social and economic development is not something that happens to people,but must first of all find its roots within the society it benefits. Expecting too much of the university as an instrument of social reform might result in disappointment and disillusion.

It should also be considered that the university is not only an agent of change and reform but also an agent for stability, for transmission of the cultural heritage, and that the university is often an object of reform rather than an instrument for reform. An institution of higher learning usually subjects to the wind of change as does the society. A college teacher, usually preoccupied with the pursuit of his own discipline, should have a greater sense of social involvement for societal betterment.

According to James A. Perkins, the well-known educator, it is through its graduates that the university has the most potent influence for social change. In Perkins' own words, "The university's greatest instrument for social reform is surely not its institutional muscle but its graduates". This being the case the question then is: What are the traits of the individuals, skills and attitude, of social and economic development to be developed that are conducive to the process in terms of knowledge, and how should it be done so that university graduates may significantly benefit society rather than exploit it?

Another way of contributing to social and economic development is through the works, research and publications of the professional staff who are especially concerned with the application of science or scientific thinking to socio-economic problems.

These and many other ways are available to the university to respond to the social and economic needs. Which way is the most effective and how it will be conducted are points worthy of our deliberations in the Seminar.

Another issue to be earnestly discussed in this Seminar touches on the needs, and problems as confronted by the people in each country of the region and of the region as a whole. For that purpose we have invited a number of scholars to present their views. Every country has to cope a bewildering variety of problems, the urgency and nature of which differs from one country to another — owing to the diversity in conditions, situations and approaches prevailing in particular countries, patterns of administrative structures, national interpretations of social commitment, as well as the existence or non-existence of a national policy and programme of social commitment of higher education. Differences may also be evident from one section of a country to the other. The discussion on various problems at this stage will be more or less general in nature. It is our firm conviction that for a problem to be solved it has to undergo the process of analysis so that it may crystallize into specifics. For this purpose we have chosen, perhaps the most basic human needs of all times, i.e. the problem of food.

In one of the past conferences, it has been expressed that many basic problems have been discussed but not delved into them. Also the comment has been made that the problems discussed were abstract in nature. We should therefore keep these observations in mind. It is appropriate to quote W.E. Bauer, Canadian Am-

bassador to Thailand, who has succinctly expressed his ideas to the 1977 graduating class of AIT in Bangkok thus:

> *"... every year, millions of words are uttered about the fundamental problem (the basic human needs), thousands of papers are distributed, and tens of million dollars are spent — very often by people with little first hand experience with poverty, and often with very little interest in solving these problems .... People involved in the many fields of development tend to fall into the trap of relying upon the same abstractions, the same admonitions, the same cliches .... Practical solutions are more difficult to find than are words and good intentions and required much greater effort, as well as continuing dedication...."*

Indeed, no problem is simple. It is also an intricate part of a web of political, social, economic, cultural and psychological ramifications. More often than not, higher education has to share the efforts with other agencies to help find alternative solutions, theoretical as well as practical, to social and economic problems. To be sure, many problems will persist in different and changing conditions and definitely require new solutions. But insofar as social and economic development is increasingly dependent on break-throughs in knowledge, the role of the university has noticeably been enlarged, and it is becoming one of the determinants, rather than a passive reflector, of social change.

This Seminar will first touch on the role of university in social and economic development in general. Then it will turn the searchlight on its role in one particular aspect with the expectation, that positive recommendations may emerge to augment and vitalize the contributions of the university to society. It is expected that the outcome of our Seminar will be of great value.

May I now have the pleasure in inviting Y.B. Dato' Murad bin Mohd. Noor, Chairman of RIHED Governing Board, to declare open this Seminar on "Higher Education and Social Commitment".

OPENING ADDRESS BY
Y.B. DATO' MURAD BIN MOHD. NOOR
CHAIRMAN, RIHED GOVERNING BOARD

On behalf of RIHED and its Governing Board, I wish to express my gratitude and extend my warmest welcome to all of you. The university is crucial to development. Higher education is assuming an increasingly important role in the life of nations. The university has been called upon to respond to the new demands arising from the rapid transformation of societies, resulting from scientific and technological advancements. In addition to its traditional function of the transmission and expansion of knowledge, higher education should more and more attempt to serve as a potent instrument for the development of society rather than functioning merely as a passive repository of knowledge.

The university has the potential and expertise to prepare future leadership and to impart proper skills for national development. The concept of development is essentially related to the quality of life, both materially and non-materially.

Development is not an end in itself. Development is in actuality the creation of better living conditions. Development signifies the mobilization of all factors — be it economic, social, technological, or political — to improve the quality of life rather than merely to enlarge gross national product. Development is not simply getting more of what society has accumulated. It also has its social and human aspect. Development should be viewed in terms of total human well-being.

The purpose of development is to provide for every human being the opportunity to enjoy better living conditions. Development in essence means better nutrition, housing, education, social service, employment, and a more equitable distribution of income and wealth. Higher education in the service of development can contribute to the increase in the productivity of material goods which help make human life more pleasant and rewarding. At the same time, higher education must also be concerned with human dignity, morality, and social justice.

The horizon in which higher education can contribute its services is almost limitless. The priority of the most urgent needs very much depends on the condition of each nation. We are also still in the process of seeking the most effective ways whereby the university may serve the needs of the people.

Universities are the principal guardians of the quality of education and have the greatest responsibility for maintaining or even raising academic standards, and the level of the nation's intellectual development. The university's commitment to intellectual excellence through basic, fundamental research is of great significance. However, the university should also devote its scholarly efforts to pressing issues in society. The concern for social and economic problems is so widespread that institutions of higher learning can no longer ignore it. It is appropriate that higher education directs itself increasingly to find ways of solving socio-economic problems of the nations such as food, health, environment, rural and urban development, housing, and the like.

In addition to its discipline-oriented approach for maintaining and raising academic quality, higher education, being concerned with social and economic problems, should also employ the multidisciplinary problem-oriented approach.

Reaching out for the best counsel, we have invited scholars and experts from various disciplines to ponder over the subject matter: "Higher Education and Social Commitment". The topic may turn out to be complex and intertwined, but, in the spirit of the joyous season, we are optimistic that positive results will yield during the three-day deliberations.

I hope you enjoy your stay in Singapore. I do appreciate your contributions of ideas, proposals and policy recommendations. I hope that this Seminar, i.e. *our* Seminar, will be very informative, interesting and, above all, productive.

Ladies and gentlemen, I now have the pleasure in declaring this Seminar open.

PART I

THE MEANING AND IMPLICATIONS OF SOCIAL COMMITMENT IN HIGHER EDUCATION

THE MEANING AND IMPLICATIONS OF SOCIAL COMMITMENT IN HIGHER EDUCATION

Wu Teh-Yao, Ph.D.*

In times such as these when all our nations are confronted with complex and perplexing problems in nation building, it is better to light a candle than to curse darkness.

A perceptive ear and a perceptive mind will be able to discern the state of a nation when the music of the country is heard. Music appeals to and expresses the emotions of the people and the collective emotions of the people reflect the collective mood of the nation. The mood in turn affects the style, way and trend of national life. "If", as Shakespeare said, "music be the food of love", and if such music is the prevailing tune, then that nation will have no heart in the serious matter of nation building which requires hard work and personal sacrifice. If the music indulges in a mood of pleasure and ease, it is most likely that the people will indulge in luxurious ease. If the music is martial in spirit, that country is prone to be nationalistic and the people generally will not be afraid to die for their country. Many reservations, however, can be made to such sweeping observations and many will disagree with such generalizations. But such a role that music could play in a nation had been the theme of music education of both Plato and Confucius, the two men whose ideas and ideals still have direct and indirect influence upon the system of education of modern times.

In the same line of observation, one can say that with a perceptive eye and a perceptive mind one can discern the general state of affairs of a nation by seeing what is going on in the country's institutions of higher learning. This related state of affairs is even more perceptible and, in some cases, quite glaring, in the newly independent or developing nations. If an institution of higher learning or a university depends upon foreign assistance to maintain its academic standards and financial support to purchase its scientific equipment, then that country is also dependent upon foreign support for political independence and for military equipment. If the institutions of higher learning in the country just copy the forms and contents of the curriculas of universities of other foreign countries, then that country is sure to look to other countries for academic as well as other forms of standards to catch up with. If the institutions of higher learning are troubled by unrest and demonstrations, that country will also be troubled by social unrest and demonstrations. If a university can freely embark on a discipline of enquiry, then that country is tolerant of the freedom of expression. If a university is not free to embark on a topic of enquiry, that country is usually less tolerant about the freedom of speech and of the press. Again if the institutions of higher learning and the university in particular of a country are attended only by the wealthy and the socially privileged, then that country is sure to be governed and administered by a group of social elites. If the rich and the poor, irrespective of racial origin and religious belief have equal opportunity of access to receive higher education, then that country will be democratic also in other areas of its national policies. It is in such light and perspective in the first instance that the meaning and implications of social commitment in higher education should be read into.

In such a perspective, an institution of higher learning, the university in particular, reflects the state of affairs of government and society. More often than not, it

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is also a weather vane forecasting of events to come. There is no lack of historical evidence to support such a statement. Europe of the eighteen forties was a case in point and China of the first half of the twentieth century is another. History seems to repeat itself in many of the countries in Southeast Asia including those states of the Indo-China peninsular before 1975. Of even more importance than portraying and forecasting is that an institution of higher learning is the seat where the young minds of the nation are moulded and formed. The future and welfare of a nation will depend upon such minds which collectively and eventually will represent the mind of the nation. Thus, in viewing the role of higher education, it has to be in such perspective that the meaning and implications of social commitment in higher education in the second instance should be monitored.

If such interpretations are accepted then the implications of social commitment will loom large in magnitude and importance. Since higher education plays an important role in the moulding of the mind, no nation can afford not to pay special attention to its existing conditions and future development. In the course of history, however, many nations have not heeded this aspect of the dictates of human history and events. Instead, much of human energy and national resources have gone into military equipment as the national frontline of defence and preparedness. Little did the policy makers realize that the most far reaching and fore-frontline of national defence and preparedness is the condition and attitude of the mind of the people. The mind is the store house of knowledge and knowledge in our world today is power. Such power is not subject to the erosion of rust and like matter is indestructible. Such power comes from the classrooms and laboratories of institutions of higher learning. So when a wise man of the East was asked what was to be done when a nation was populous and rich, his answer was, "educate them". The same wise man remarked that when soldiers were thrown into battle without education, it was like throwing them away. They would not know why they had to go to war. Higher education is naturally of greater importance for the nurturing and producing of leaders in business and industry, for science and technology, for leaders of literature and medicine and, above all, for leaders in administration, diplomacy and government. It is in the light of such historical perspective that a modern nation, in the third instance, should gauge the meaning and implications of social commitment in higher education.

It follows, therefore, that an institution of higher learning, located in a society which nourishes and sustains it, must be socially committed in one form or another to that society. If not socially committed for the good of the country, it is an institution without a soul, it is a cluster of buildings without a group spirit, it is like a ship sailing in the vast expanse of the academic sea without direction and purpose. Are not some of the institutions of higher education in our region suffering from such a malady? Just examine the courses and their contents. How many and how much are really related to meeting the needs of the indigenous society? How much of the research is related to solving local problems that arise out of urbanization and industrialization? How often have our institutions of higher learning changed courses and emphasis because some prestigious universities abroad have changed theirs? We seem to float with the academic trends and tides of the West in our values and concepts of higher education. Have we not alternately changed our emphasis on specialization to general education and then back to specialization and perhaps back again to general education? Have we not used the well known case studies in their entirety of a highly industrialized society to teach in our business schools which are located in a business and industrial environment quite and even radically different in many ways from that of a very well developed business society? How relevant are our universities?

If the institutions is without a sense of social and national purpose, then the staff members, both academic and non-academic, would rather be inclined to refrain from having social commitments. In such an institution, there is no such thing as loyalty. The teaching staff are like pedlars of knowledge. The rest just come in to work as they are expected and told. Many will take the attitude: "To be a monk for a day, to ring the bell for a day". A few even carry this attitude and practise it further. "To be half a monk for a day, to ring the bell for half a day". In such a situation of this kind, endless gossip becomes a spice of life and rumour mongering becomes the order of the day. In a situation of this kind, every man is for himself, no matter how many dead bodies he is going to step over to attain his selfish ends. Each will be jealous of the other. Envy will fill his heart and a general satisfaction will be subtly expressed over somebody's misfortune or downfall. Such can be the implications of the state of affairs of an institution of higher learning if there is no social commitment or sense of national purpose in its endeavour.

If the staff members remain socially uncommitted, then the students will graduate and go into society without an awareness of the necessity of social commitment of any kind. Such is the prevailing trend in not quite a few of the institutions of higher learning of the region. Students often take a difficult road, emotionally and mentally exhausted to reach the university, not to mention the anxiety and financial outlay of the parents. They are put through the courses, quite a number of which are irrelevant, diluted and outdated in content, and quite often duplicated elsewhere in the university. Some do not even know what the courses are for. Their's is to listen and not to question why, is the accepted custom and practise. Then they often have to sit through repetitious and dull lectures, with the lecturer holding the sword of Damocles — the marks — over their heads. The duller the lecturer the heavier and bigger is the sword. Towards the end of the semester or a year, they sit through a series of examinations which are designed more to find out what the students do not know rather than to find out what they know or should know. Then they graduate with beautiful diplomas into a society quite different from what they know or experienced in the classrooms. They will find out that business is not conducted in the way that is taught in the university. Politics is not performed according to the rules laid down in the textbooks by the recognized authorities in political science. What has been learned, has to be unlearned. Doubts begin to set in and often confusion and cynicism becomes the mood of the once brilliant student of the prestigious national university of DEHIRLAND (There is no such country in existence). Gripped by such a prevailing mood, the once idealistic, full of hope student often turns to the defence mechanism of self-seeking. After all, it is only natural that one should take care of one's own interest first. Are they not being taught to be independent and self-reliant? But carried to the extreme and interpreted wrongly, self-reliance and independence could cross into the insatiable sea of selfishness purely for selfish ends. A selfish man will seldom be interested in social commitment for the good of others, not even to mention the feeling of social concern for the plight of the less fortunate majority of his or her fellow citizens. By his brawn and his wit he will live in the society of which he is not aware of its existence or he does not care. He will milk it for his own benefit and accumulating wealth at home and abroad for the benefit of his children and children's children. If there is a crisis in the country, he will pack and leave. He will return when it is over and leave again when necessary. What social commitment is there to talk about if such is the attitude of the potential future leaders of a nation coming from such institution of higher education?

II

Now that the maladies of and in higher education have been enumerated and diagnosed, what then, physician, is the prescription for the cure? It must be admitted with a deep sense of humility that no physician is absolutely sure that his prescription is to produce the cure. Much less can a professor who only professes to know, produce a formula that is going to eradicate all the ills that beset an inherited alien system of higher education or a univerity which by itself any where is a unique institution with a life and pride and a realm of its own. Without a university, a country has problems; with it a country faces problems. With problems and theories abound it will be a risky business to put forth a set of "cure all" formula for all times in our system of higher education today.

It must be recognized that the lack of social commitment of institutions of higher learning had and has always been there ever since the founding of the ancient universities in Europe and in other older civilizations, like Egypt and China. Confucius in the 6th century B.C. lamented the fact that students of his day were only interested to pursue learning to show off to others. There was no idea of doing something for the people. The older traditional universities of Europe were dubbed as "ivory towers" of which we now take issue. Therefore whatever is suggested can only be indicators of reforms to come or as ideas to stimulate and bring forth sounder and more workable ideas from better minds. It must also be further recognized that an institution of higher learning is not the only level that the sense of social commitment is to be taught or inculcated. As a matter of fact, the inculcation of the value of social commitment must be done at all levels of education, from the primary to the secondary and from the secondary to the tertiary and from the tertiary to the general society. Thirdly, a good case can be put up to say that everything that is being taught and done in an institution of higher learning is social commitment directly or indirectly. Who can deny that the training of a good teacher, a good doctor, a good chemist or a good engineer, is not social commitment — commitment in the broad sense of the term? Therefore it is in the broad sense and not in the narrower and particular sense that social commitment in higher education should be interpreted.

Lest one be carried away by the argument and enthusiasm for social commitment, a cautionary word at this juncture is also necessary. In an institution of higher learning, one does not have to be a social worker in order to claim the legitimacy of social commitment. Nor does a university want to produce social workers only. Care must also be taken not to allow the pendulum swing too far to the extreme. True it is that the existing type of institution of higher learning is more oriented towards teaching and research after the traditional type of universities of the West, though quite a number of the universities in the region are becoming applied minded. More and more such is the trend towards meeting the demands of a more complex society that is on its way to industrialization and modernization. To discredit altogether the traditional type of university, one is in danger of discrediting the value of learning having an intrinsic value of its own worth. Furthermore, a guilty conscience will irk and egg the students and possibly some teachers to become social and political activists. This has happened to institutions of higher education in the West as well as in the East. During the Great Cultural Revolution period in China, academic progress was very much retarded because the whole student body in all institutions of higher education in China were involved in social or political activities in one form or another. In the sixties and early seventies in the U.S.A., class instructions were rudely and violently disrupted in many respectable universities because of political activists who in fact were very small in number. But damage was done, including the destruction of buildings and equipment.

With these reminders and caution, let us proceed to lay down the guiding principles that may help to increase the sense of social commitment in institutions of higher eductation.

The first step is to look into the present system of higher education and set the aim and goals of higher education in the light of needs of nation building, taking into account the social, economic, political, cultural and religious environment of the country in historical perspective of the past, present and future dimensions. In this way and with clear cut aims and goals, it is expected that all institutions of higher learning in the country will have a clear sense of direction and purpose and in time to be truly national institutions, rooted in, and can flourish on local soil. The overall aim here suggested are to be five-fold:

1. Towards the cultivation and character building of the individual so that he or she will go into society as an upright and cultivated person.
2. Towards the inculcation of a sense of social commitment and service to the people so that he or she will be a part of and not isolated and alienated from society.
3. Towards the achievement of excellence in academic pursuits, in play and work, so that he or she will have acquired the habit and attitude to maintain high standards in performance.
4. Towards the realization of the value of fairness in dealing with one's fellowmen and citizens so that this attitude can be transmitted into society by personal examples.
5. Towards the self-realization that the more the talent, the more is work and service expected of him or her. Those who receive higher education are the talented privileged few. Special privilege should be balanced by special responsibilities as special rights should also be accompanied by special responsibilities for the public good.

The particular aim is to educate both the teacher and the student to be aware of the problems of the society in which they live. Some of these problems could be social and economic; others could be political and cultural and still others could be religious or of a particular nature such as care of the aged. However, meticulous care and emphasis must be taken to point out the difference between awareness and concern and actual participation. First things must come first. The teacher's role is first of all to teach well and the student is to learn well. Only after these roles are done well, then a portion of the time may be spent in worthwhile social, cultural or other projects. It must be emphasized that, the period of higher education is a period for the nurturing of character and the absorption of life's high moral values and the learning of skills of certain fields of competence or specialization to prepare for life-long careers and service to the nation. Active participation should be kept at a minimum and it should not interfere with class work which should be given top priority. Politics, the art-science of the possible and the uncertain, should be left to more mature minds and in experienced hands.

Three ways are suggested toward the attainment of these aims, one preceptorial, the other, practical and the third is the change of emphasis.

1. The preceptorial is a suggested year course, *The Philosophy of Life* to be taken as a required course by all students who receive higher education. The contents of such a course should deal with the basic issues and the choice of values facing life and society. Such a course should be interdisciplinary in nature, drawing its staff and teaching material from the humanities and social sciences. Because of the magnitude and importance of such a task, a special committee composed of academic heads

preferably of the deans level should be established to coordinate the work and teaching of the course. It is hoped that the students who receive higher education will be exposed to and be challenged by the ideas and ideals of this course so that they will be aroused by their conscience to have a sense of social commitment when they enter into society to pursue their careers. As values and social attitudes are usually formed in one's early youth, a similar type of required course such as *Man And Society* with emphasis on national issues and values should be taught at the *Secondary* School level. Another, to be called *Education For Living* with emphasis on basic concepts of healthy living and civic consciousness should be required teaching at the Primary School level.

2. The practical, is a suggested labour programme, also for a year whereby all students are required to work with their hands to perform unpaid cleaning and maintenance work in buildings, classrooms, including the public toilets of the institution's premises. Such a programme can help the students to respect the dignity of labour however humble it may be. It can promote the ideal and practice of democracy as they, the students, the intellectual elite of the nation, the rich and the poor, the sons and daughters of high officials and the daughters and sons of lowly paid workers can work together willingly enough to soil their hands. It can also help them to realise the importance of practical manual work. Such an experience, especially at a higher education level can create a sense of attachment and rapport with the masses of the people. Such an experience can help instil a sense of social purpose and commitment.

3. The change of emphasis is a suggestion to adopt a systematic and determined approach to re-evaluate the value-disciplines, such as those of the humanities and social sciences with the view to change the emphasis and if necessary and feasible to replace totally or partially the contents of the courses so that they will reflect indigenous local and national values and cultural heritage. On embarking on this exercise that affects value judgements and therefore also the attitude of the mind, care must be taken not to exclude universal scientific truths and the accumulated cultural heritages of mankind.

In the final analysis, it is in the actual doing backed by a sense of conviction that the meaning and implications of social commitment in higher education should be read and received. The task is an arduous but urgent one. Newly independent nations, *earnestly* bent on nation building usually are impatient, especially with the institutions of higher learning. If an investment in industry can produce results in a few years, why cannot an institution of higher learning which is a great consumer of the nations precious and limited financial resources bring returns in 10 years? An ancient saying, "It takes only ten years to grow a tree but a hundred years to cultivate a man" is not easily understood or appreciated in our age. Patience usually is not a virtue to be expected of men of action. Our institutions of higher learning are caught between the march of times and the demand of needs and it seems that they are always behind the times and short of meeting the needs. It seems time is not on our side. In times, such as these when all our nations are confronted with complex and perplexing problems in nation building, it is better to light a candle than to curse darkness.

DISCUSSION

The discussants of Prof. Wu Teh-Yao's paper on "The Meaning and Implications of Social Commitment in Higher Education" were Prof. Dr. Prajudi Atmosudirdjo, Prof. Chai Hon-Chan, Mr. P. Arumainathan and Dr. Pradit Cheuychit.

The essence of the discussion is summarized below:

Generally there was no disagreement concerning the need for universities to be socially committed as outlined in Prof. Wu's paper. Two participants saw the university as part of a dichotomy (university vs. society) or a trichotomy (university vs. community vs. nation). The university in other words must be anchored to the society which sustained it and the relationship between the two ought to be one in which each supported the other. In iteration of the main points raised in Prof. Wu's paper, a participant outlined a framework of social commitment as follows:

a. social commitment as on overall spiritual striving of the university, the community and the nation
b. social commitment as a state of mind, a cluster of attitudes which needed to be developed by higher education and
c. social commitment as a programme of activities engendered to engage staff and students in universities in socially or communally beneficial projects.

Having established the rough framework of discourse, participants went on to explore the meaning and implications of social commitment in actual practice.

There was no doubt that some universities in the region were already engaged in promoting social commitment among both students and staff. One participant quoted the examples of Indonesia, viz., the programme called "going down to the village" (Program turun ke desa); the volunteer work programmes in the rural areas under BUTSI; and the compulsory field-work programme for final year students under KKN (Kuliah Kerja Nyata). While these were useful illustrations of a socially commited higher educational programme, yet one participant felt that there were practical problems of translating social commitment on a large scale and in specific areas. For instance, there was a need to give careful consideration to the practical problems involved such as for example, the problem of scheduling and curriculum integration should the concept of social commitment be extensively institutionalized. The fact that universities were expected to fulfill their basic functions first, viz., providing proper training and achieving academic excellence through research, might tend to negate propensities for social commitment. It was felt that social commitment should not be conceived of as institutional commitment alone but more importantly personal or individual commitment. In exemplifying social commitment, there was therefore a need to differentiate between social commitment expressed institutionally and social commitment expressed individually. The latter aspect would imply among other things, the development of a caring attitude toward society; a sense of justice; and a commitment to repay society in some form consequent on having been offered the opportunity to pursue higher education. These values ought to be a part of the individual's value system consequent on receipt of higher education. In order to realize this, it was suggested that education should strive to attain the twin inter-related objectives of "education for living and education to make a living".

Yet a no less needing problem raised was the question determining who ought to decide what constituted social commitment? To begin with, an opinion was

expressed that there was still uncertainty as to how the university stood in the total development process of a nation, for instance, what was the role of the university in development strategy? Equally, some academics were not clear about the concept of social commitment while some were totally uninterested in it. It was thought therefore that there was a need to determine what the role of higher education was. Was its role ascribed or defined? In obtaining an adequate answer there seemed to be a need to look at the question from the points of view of the government, the institution concerned, the students and society at large, though it was accepted that since the government was usually the major or only source of funding its view would by and large be dominant.

An interesting view offered was that students and staff were not without a sense of social commitment. Cited as an illustration was the fact that many of them were not averse to manual work, particularly in the farms. What seemed lacking was poor governmental support and bureaucratic incompetence in channeling social energies to fruitful purposes. In support of this point was the explanation that frequently there was a problem of deciding what constituted relevant social commitment. There were divergences of conception in this regard between the university and the government.

A diametrically opposite view was expressed by another participant to the effect that university academics and graduates showed very little social commitment in practice. The more education they had the further they stayed away from commiting themselves socially. It was therefore advocated that there was a need to inculcate a sense of service among undergraduates in particular. Yet another viewpoint offered was that social commitment was only meaningful if there were opportunities available to be of service to the society. The last point seemed to have prompted another participant to say that individuals reacted differently to social pressures and attitudes regarding social commitment. An individual's first responsibility was to ensure that he had acquired the wherewithals of personal well-being. Therefore, there was a need for society to meet this need adequately before social commitment could become individually meaningful. This suggestion seemed to imply a point raised by another participant that the immediate task of higher education was to ensure that the poor and under-privileged were allowed greater access to higher education. Thus social commitment was not meaningful in a situation where the wealthy had an important edge over the less fortunate.

As if to emphasise the need to set priorities right, another participant suggested that the university's first responsibility was to produce competent graduates in order to justify its existence. Furthermore, did the concept social commitment mean that those who were engaged in exemplifying it must have as their orientation their own society? Might not involvement in the solving of portentous human problems everywhere be regarded as social commitment as well?

There was a view expressed that students frequently conceived of social commitment as being related to the degree of their participation in decision making. Students it was iterated had in the past refused to separate the two. The question raised was to what extent, if any, should students share in the decision making process?

Finally, several concluding comments were made by Prof. Wu, partly in answer to some of the remarks made and partly to elaborate on points made in his paper.

Prof. Wu reiterated that social commitment should be regarded as a voluntary public service performed beyond the normal duties expected of a person who had

been trained for a role. Social commitment should be seen in the context of the developing society concerned. According to him, the first obligation of a person was to his own people, their welfare and well-being. How social commitment was defined varied according to the society, the period, the culture, and the circumstances. He suggested that there was a need to re-evaluate the concept of the university with a view to identifying the forms of social commitment that it was expected to show. One way was to take a look again at those courses which dealt with values including imported text-books. In regard to students and their wish to have a say in deciding university affairs, it was suggested that it was inadvisable (particularly in matters pertaining to what courses to teach and how to teach them) as it would have various undesirable implications for the success or otherwise of higher education.

The session ended with a vote of thanks from the chairman to the speaker.

PART II

SOCIO-ECONOMIC NEEDS AND PROBLEMS: CHALLENGE TO HIGHER EDUCATION IN SOUTHEAST ASIA

SOCIO-ECONOMIC NEEDS AND PROBLEMS: CHALLENGE TO HIGHER EDUCATION IN SOUTHEAST ASIA

Amara Raksasataya, Ph. D.*

This paper is intended to facilitate the current thinking on the role of higher education in advancing social development through positive commitment. It will cover broadly the topic by assuming the necessity and desirability of such commitment of higher education. It will not discuss the meaning and implications of social commitment in higher education which has been competently dealt with by Professor Wu.[1] It is hoped that this paper will lead to further debate on this issue as well as to much needed action.

The central issue of this paper will, then, not be whether or not higher education should be involved in social services, or committed to social development. Rather, it will address to the question of how much and how far higher education in Southeast Asia should and could perform such function. It will cover obstacles or limitations that have been inhibiting them from doing so. Lastly it will suggest how higher education should be mobilized to perform this function, that is, to operationalize the objectives of the Seminar itself. A checklist on how higher education institutions could do in the field of food production is also included as an example.

I. Social Commitment and General Responsibility of Higher Education

It is generally accepted that the university has three main functions, namely, teaching, research and services. It has also been an unsettling issue as to the meaning of the term "services". At various times this is meant to cover services to the immediate community where the university is situated. However this is being expanded all the time to include working with the government and other public and private institutions as well. Lately it is being used to cover the area of social service and social commitment.

The reason why the debate is unsettling is probably because we are limiting ourselves to a certain frame of thought and the way it is expressed. What probably should be done to eliminate this impasse and unnecessary debate is to rephase our thought. Try the following statements:

1. The university has three main functions: teaching, research and services.
2. The university as a social institution is created to serve the society through teaching, research and other means.

If the second statement is accepted the proposition that higher education should have a direct role in social service and social commitment will be taken care of. In fact the role of the university or other institutions of higher education will be broadened as the term society is broader than community, society or country.

I happen to advocate a greater role of the university because its responsibility which goes far beyond the campus. It is necessary, at this point, to reiterate these

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responsibilities of the university to serve as a reminder so that irresponsible elements will not lead it to unwholesome path:

1. The advancement of arts and sciences and their application for the good of human being.
2. Universality in concept and application.
3. Students — to produce technically qualified people and a well balanced personality with humanitarian morality.
4. Local community.
5. National community, national government (especially in case of public institutions surviving on people's money).
6. International community (especially, of scholars; but also includes human well-being throughout the world and the universe).
7. Future generations.
8. Environment and natural resources, nationally and globally, to ensure a better quality of life of man.

II. Services to Society

Looking from the standpoint of the university's responsibility to the society as enumerated above, the concept of dividing the university's functions into direct and indirect ways becomes irrelevant. Because a function such as teaching would be regarded as a direct service to the society as it is the university's principal function to produce educated manpower for the society. If one looks at "service" as one of the three functions of the university in the traditional manner, then teaching could be regarded as an indirect service to the community. A more relevant division, if at all necessary, could be the services performed within the campus and outside it.

The following list is indicative of possible services that a university may provide:

1. *Teaching of students* to become technologically and academically qualified persons; to be morally acceptable; and, in connection with social service, to have a strong social commitment and a sense of relevance.
2. *Research* which could be divided into 2 main types — a pure type of research for academic and theoretical interests, and an applied or action type of research which could be addressed to curing the social ills.
3. *Publication* which could be divided into 2 main types too, namely, publication in professional journals addressing to scholars and students; and in the more popular journals, newspapers, and other media. The latter could be of immediate use in the society.
4. *Consultation.* University professors may provide consultative services to public, private organizations and individuals. They may also serve on government, business, social and philanthropical committees to provide technical expertise.
5. *Training.* University professors can participate in all kinds of training activities to government officials, business employees, labourers, local leaders, etc. They normally can give more objective views on various matters than a government bureaucrat.
6. *Discovery of social ills and conditions.* As part of the traditional dictum that a university professor's role is to profess the truth as he sees it, he may, on discovery of a condition or a social ill, speak out. This is a useful function in many developing countries where people do not know or see the truth, and do not speak out when they see one.
7. *Advocation and Promotion.* Once he finds truth, and identify it to the society, he may also discover ways to treat it. After this it is his duty to advocate, to promote, to rally support to effectively treat or cure the ill that

he has perceived. This is by far the most important role to become socially committed. The areas that the university may take strong stand for the benefit of the people are consumer protection, environmental protection, and prevention of arbitrary rule, etc.

8. *Arbitration.* In the absence of strong institutions to impartially arbitrate on major social issues, the university may act as final arbiter as it is supposed to be storehouse of knowledge and stronghold of impartiality.
9. *Forum.* In the countries where tradition of free expression of ideas is weak, the university is perhaps the strongest place where ideas are sought, expressed, and debated. This is a very important function of the university — to be able to open public forum on major issues.

III. Extent of Commitment

While it may be desirable to encourage university and institutions of higher education to provide services to the society to the utmost, it is necessary also to recognize the limit beyond which they cannot perform satisfactorily or with adverse effect to their other obligations. The purpose of mentioning the limitation here is not to discourage but to make it possible to find a better solution so that they can perform these services more effectively.

The limits of the extent of university's ability to participate in social services are numerous, as follows:

1. **Structural Limitations**

   a. The university is not always a very well integrated organization. Its three main components, viz., the faculty, the administrative staff, and the students are much of the time working at cross purposes. Its governing body, e.g., Board of Trustees, cannot normally integrate them to channel all efforts to any particular direction, let alone to social services which many members may disagree.
   b. Schools and departments are highly compartmentalized. They are mostly autonomous in administration and independent in mentality. Cross departmental coordination is always difficult to achieve.

2. **Faculty Limitations**

   a. *Individualism* is probably the correct term to describe a faculty member's personality. Many of them regard themselves as equals, their disciplines foremost, their perception the most righteous, etc. If a professor happens to believe that his primary responsibility is to the subject he is teaching, then there is no way to get him to talk about other subjects. Or if one is committed to laboratory research, he may not even come out of it for some time. Some of these, by the way, is commendable.
   b. *Income problems.* In most Southeast Asian countries, faculty members are underpaid. Therefore they have to seek extra jobs to earn additional income. This often means that they have already compromised the teaching quality and academic research for more gainful activities. If social commitment means extra effort without extra remuneration it is not likely to be attractive.
   c. *Competition and rivalry.* Many faculty members often spend otherwise productive effort in pursuit of promotion. Some do it legitimately through teaching and research, while others do it through all kinds of

maneuvering such as to get administrative posts where connection with people in high place may land them in richer greens. Many also seek wealth, status, power outside the campus, such as political appointments. Some of these people will not likely be good samaritans either.

d. *Professor-student relationship.* A successful university's social service programme would presuppose close faculty-student relationship. However, they are normally separated from each other. The ability of the professors to generate enthusiasm and actual commitment to social goals among students cannot be taken for granted. There are some professors who can generate such enthusiasm, but it probably turns out that some of them really have other ulterior motives.
e. *Promotion criteria.* Most universities use academic achievements through research and writing, academic qualification (high degrees), teaching load, and administrative responsibility as criteria for promotion. Thus staff's efforts are geared toward those activities. Community and social services are rarely recognized as a qualification for promotion.
f. *Personal problems.* Faculty members often encounter complicated personal and family problems and obligations, especially those residing in metropolitan areas. Carting children to school on the regular basis may prevent them from doing extra work anywhere, for example.

3. Resource Limitations

a. *Manpower limitation.* Most universities in Southeast Asia do not have adequate teaching and research staff in the first place. Therefore releasing them, or to encourage them to perform out-of-campus social service activities is hardly possible.
b. *Financial limitation.* Most universities are relatively poor. They have difficulties financing staff research, laboratories, library, etc. It would be difficult to channel such limited fund to social services.
c. *Time limitation.* Unlike most administrative work, university operates at the pressure of time. There are school terms, lecture sessions, etc., to be met on the dot. The summer vacation at the end of a school year is in fact short. Thus to encourage faculty members or students in a meaningful social service is hardly possible if we are to rely on free time and vacation.

IV. Identifying the Socio-economic Needs and Problems of Southeast Asian Countries

As a first step toward solving socio-economic needs and problems of Southeast Asian countries, one must find out what these needs and problems are. To do so is not an easy task. Different people seem to perceive the conditions in a country differently, thereby identifying different needs and problems, let alone the ways and means to solve them.

If the university would like to help solving socio-economic problems, it must first try to identify them. Though it is a storehouse of knowledge and full with potentiality, no university has ever carried out this task, except by individual faculty members pointing to certain problems that they have identified. No overall search has been done nor a comprehensive list of needs and priority for the whole country has been made.

In 1975-76 I was enticed into this field after viewing successive waves of demands by various groups in Thailand in the 1974-75 period. After going through lists of demands, I was able to come up with some simple models on how to identify a country's problems. Interested persons can study the report cited below for detail.[2]

Based on that experience, it is possible to offer a few suggestions to universities in Southeast Asia wishing to help identify such societal needs and problems:

1. *Research into Parliamentary Discussion, Debates and Questions.* In a democratic polity, it is assumed that the Parliament, composing of people's representatives, represents the people, therefore the discussion and debates especially at the budget sessions should be regarded as expressing the need of the people. Also important are the questions that the M.Ps. ask cabinet members. Research through these records over the years would reveal types of needs and problems prevalent in the country.
2. *Research through Newspapers.* In those countries where newspapers are free and that they often reflect the people's aspirations and concerns, a research through them over a number of years would result in useful information.
3. *Research through Grievances and Petitions.* In those countries where people have the tradition of writing letters to newspapers and government officials at various levels, including the prime minister's office, a research through all these grievances and petitions would reveal problems of the country.[3]
4. *Research through Demands by Various Groups, Organizations, Demonstrations.* In those places where demands are made publicly and vocally, by groups, organizations or mass demonstrations, such research would be necessary, not only as a matter of political expediency but as a recognition that serious problems are emerging. Here survival of the society itself is at stake.[4]
5. *Stratified Research in Various Types of Population.* In a smaller country where people are engaged in a few major occupations, or in definable geographical areas, it may be possible to classify them scientifically and launch a more thorough research to find out social needs and problems.
6. *Public Opinion Research.* In a larger country, the intensively stratified research or survey may not be feasible. Here one can turn to public opinion research techniques to ascertain popular opinion on various issues, or to ask them about general conditions of the country.

Note should be taken that the university which is interested in identifying the country's problems must be careful in selecting what types of research mentioned above should be carried out because conditions differ from one country to the other. It should be pointed out also that a problem identification research from one or a few target groups is likely to have some distortions. Thus a multiple research of different target population where results are checked against each other would be more accurate. Another vital observation is that such research is likely to reveal only current and obvious problems. Long term, and complicated problems will not be mentioned by many respondents. Therefore a secondary indepth analysis by the researcher must be done to classify problems into several categories such as immediate, intermediate, and long term problems; or specific, systemic, and basic problems. This latter classification is used in the paper cited.

On the other hand, it may be correct to assume that each country has a lot of problems, resulting thereby that there is no need to identify them. That is anything one wishes to lay hand on is a sure problem. Therefore any university wanting to help

solve anything at all is welcome. In this case problem areas like food, health, pollution, consumer protection, income distribution, population, employment, etc., are all major problems awaiting intelligent treatment without going through the complicated process of problem identification. However, one cannot say that one is trying to solve the top priority problem.

V. Models of University — Wide Integrated Social Service Programmes

It was mentioned earlier that a university's components are normally compartmentalized. Each department goes its own way, so does each instructor and student. The university, however, can and do render important services of teaching, research, training, and consultation, etc. Only if we know how to integrate these components and resources, the university can be a great instrument toward social development.

Below are two of the most common models that may lead to the formation of more integrated social service programmes:

1. *Interdepartmental committees model.* Here interested departments may create an *ad hoc, ad interim,* or a standing committee to coordinate efforts of various departments.
2. *Interdepartmental centres, institutes, or programmes model.* Here interested departments and schools may decide to create a permanent, or a fixed term organization to offer a joint programme or any service that they care to offer. It is now a common arrangement in many major universities to create this type of organization in addition to teaching schools and departments. The advantages for this type of arrangement are obvious for each centre will have its own staff (on loan, on secondment, or on shared appointment), and its own financial and other inputs from regular university budget and/or from outside grants.

Other models are also possible, such as:

1. *Society Models.* Interested faculty members and students from any department may group themselves into a club, association, forum, fraternity, society, etc. with an aim to perform certain services.
2. *Working Group Model.* Here individual faculty members and students may decide to form a working group, an action-oriented unit, etc., to actually perform social services in their spare time such as on weekends, vacation periods, and the long summer vacation. This type of action-oriented programmes may be a social-welfare home visiting programme, a rural development camp, field operations, etc.

VI. Strategies and Modes of Operation[5]

How a university launch a social service oriented programme will differ from programme to programme. However, it is possible to select the most effective strategy and modes of operation for each programme. These two points will be covered below as a guide.

1. **Selection of Strategies.** There are some strategies that can be selected for each programme:
   a. *Policy oriented strategy.* This means that the university involvement is

thought to be most effective if it should attempt to affect policy changes, as against an attempt toward performing the services directly by itself.

b. *Demonstration effect strategy.* Here the university programme chooses to actually work on some areas, target groups, etc., with the view of demonstrating the effectiveness of its approach, that thing could be done this particular way, and that it is hoped that somebody else (the government, or the people, or associations, etc.) will carry out similar approach on a wider scale.

c. *Action-oriented strategy.* Here the university programme will directly go into action in a selected area or a target group. The ultimate aim is to get something done somewhere. Whether or not they will be executed elsewhere is immaterial. This is a do-it-now approach rather than endless discussion, or on the "blueprint", or "paper" service where nothing is really done.

2. **Modes of Operations.** Below is a series of steps of phases that a university programme might be launched. The option for the programme is to decide at what phase it wants to start, to take and to end up with; what point it should skip. The best option is the one with the best combination. This would differ from one programme to the other.

The various steps listed below are a simple guideline only:

a. Strategic planning, thinking and discussing phase.
b. Research phase.
c. Experimentation phase which could be done to test the research results or to take experiment as a research method.
d. Application phase. This is to bring research results to the target group.
e. Propagation phase. This involves bringing research and application results to the wider public. This could be done by public addresses, publications and announcements via the mass media, etc.
f. Mass movement phase. Certain social issues would need mass support on a continuous basis. University programme may have to lead to the creation of a mass movement for the purpose.
g. Indoctrination phase. Certain issues may not need mass support, but a corps of dedicated cadre is needed. The university may be in the position to instil new doctrine, new credo among its students, or people outside the campus.

VII. Proposal for Policy Adoption

The policy recommendations below are merely suggestive. They are mostly related to creating a better atmosphere for the students and teachers to participate more actively in social service activities.

1. *To liberalize the teaching load.* This is to lower teaching load for those who want to be involved in social service activities.
2. *To liberalize leave allowance* so that more time is available for such services.
3. *To liberalize research and experimental policy* so that researchers can do more action research rather than academic research.
4. *To have a more flexible structural arrangements* so that new type of structural arrangements can be made to facilitate social service activities; not to adhere to rigid structure of the schools and departments all the time.

5. *Recognition* that social service is a principal function of the university and institutions of higher learning. Therefore persons engaged in such activities will be recognized and rewarded. A university is a great institution where all talents are not needed to gear only to teaching and academic research. A staff member who can effectively impart modern knowledge and technique to a large number of people is no less important than those who teach students in the class room. However care must be taken to avoid academic opportunists — people who use the academia for personal gains.
6. *To liberalize the curriculum or degree requirements* to allow students to participate actively in any meaningful social development programme which should be intellectually stimulating along the concept of "Learning by doing" as propounded by John Dewey, and more recently the Ivan Ilich's "deschooling" approach.[6]

VIII. Role of Higher Education Institutions in Food Problems: A Checklist of Possible Activities[7]

All activities taken or contemplated must be relevant to the need of the people, and the results must reach the masses. A checklist of possible activities is as follows:

A. Food Research and Application

Food grain — high yield and high taste.
Fruit — short term plants, long term plants.
Vegetable.
Fat.
Protein product — Animal (poultry, hog, sheep-goat, cattle).
— Fishery, Aqua culture — riverine, marine.
Pest and disease.
Micro fungi and algae.

B. Food Production Research and Application

Irrigation, water use, water management.
Land use, land development, land tenure.
Reforestation for wood fuel and for natural fertility of the land.
Farm mechanics, intermediate technology.
Fertilizer.
Feedstuff.
Food preservation, processing, canning.

C. Food Price Research Affecting Policy and other Applications

Farm income, expenditure.
Consumer price.
Price support guarantee.
Storage.
Transportation.
Wholesaling, retailing.
Role of middlemen.
Credits, loans.
Cooperatives, rural institutions.
Marketing facilities.
Taxes.

D. Food Consumption Research — Application

Nutrition: balanced intake.
Simple recommendations.
Food distributions programme to be simplified.
Consumptions: habit, taste, price, time for preparations.
Recommendations for various sexes, ages, occupations and activities proper which need different food intake.

E. Food Wastage, Danger, Utility

Over-consumption — obesity.
Harmful elements, additives.
Unnecessary expenses on beverages.
Drinks and smoking effects to health and economy.
Loss in handling, harvesting, storage, transportation.
Loss through parasites, worms, bio-chemistry destruction-cancellation.
Throwaway.

F. Social Food Activities

Motivating faculty members.
Motivating students.
Motivating people.
Enlighting the public, the politicians, interests groups.
Working with consumer protection groups, environmentalists.
Population and Food.

NOTES

1. See Wu Teh-Yao, "The Meaning and Implications of Social Commitment in Higher Education", a paper for RIHED Regional Seminar on Higher Education and Social Commitment, December, 1977.

2. Amara Raksasataya, "Problem Identification and Policy Development: Analytical Models for Thailand", U.N. Asian Centre for Development Administration, Kuala Lumpur, August 16, 1975, mimeo., 29 pp. Later on it was revised and re-written in Thai for publication by the author in *Policy Development,* Bangkok: National Institute of Development Administration, 1977 (in Thai), pp. 17-60.

3, 4. These are the two main sources used in the analysis of problems in the paper cited.

5. This does not include how a university could mobilize faculty, staff and student support to enable it to provide social services, as it will depend upon prevailing circumstances of that particular institution.

6. It was Lord Buddha, 2600 years ago, who preached that to achieve results a learner should take a theoretical study, an intensive practice, and intensive reflection on the two previous methods. This is known as *Patiyati, Patipati,* and *Pativet.* Thus, He recommends a mixed method.

7. Excluding teaching in degree programmes.

SOCIO-ECONOMIC NEEDS AND PROBLEMS: CHALLENGE TO HIGHER EDUCATION IN MALAYSIA

Chai Hon-Chan, Ph. D.*

Higher education, especially in the poor countries, is increasingly under pressure, partly self-generated, partly imposed, to be more action-oriented in meeting the needs and solving the problems of the society which sustains it. Malaysian higher education is relatively young compared with several countries' higher education in South-East Asia, but right from the start it has been society-oriented and largely vocational in bias. One of the most important tasks of the University of Malaya, established in 1948, was nation-building, a responsibility which is now shared by other institutions of higher edcuation established more recently. At this juncture of Malaysia's development, when so many competing demands are made on higher education, arising mainly from vastly increased enrolments, it is natural for tertiary educational institutions to opt for meeting the country's quantitative needs in terms of high-level manpower rather than to address themselves to more problematic issues such as quality or training for social leadership. Clearly whether or not a set of problems is considered serious enough to merit immediate action depends upon how crucial it is to the welfare of the nation.

This paper will attempt to outline some of the major socio-economic problems of Malaysia to provide the setting for an evaluation of its socio-economic needs. Hopefully this will serve as a framework for the consideration of what higher education might undertake as one of its more urgent tasks in nation-building.

Socio-Economic Problems

Seldom can any discussion of Malaysia's socio-economic problems avoid reference to the multi-ethnic character of its society. Indeed, it is this paper's premise that most of the country's socio-economic problems spring directly or indirectly from its particular form of cultural pluralism[1] which is rooted in the structure of a multi-ethnic population comprising three major social groups: the Malays and other indigenous people, the Chinese, and the Indians. It should be stressed that within each group there are significant sub-cultural variations. For example, among the indigenous people there are major sub-groups like the Kadasans, Muruts and Bajaus in Sabah, and Melanaus, Sea Dayaks and Land Dayaks in Sarawak. Among the Chinese and the Indians, dialect or language distinguish one sub-group from another. However, as a frame of reference for the present purpose, suffice it to note that in 1970, out of a total population of 10.8 million, Malays and other indigenous people accounted for 55 percent, Chinese 34.4 percent, Indians 9.1 percent and Others 1.5 percent.

The Malaysian condition, to a large extent, still fits the classic Furnivallian picture of a plural society wherein the different ethnic groups mix in the market-place and places of employment but they do not generally combine socially on a large scale (except labour unions) because on the whole they lack a common social will.[2] Essentially what holds the country together is the superstructure of Government which articulates and regulates the often conflicting needs and demands of the socially disparate groups. Thus it could be said that Malaysian society is held together by tenuous bonds which could break under the pressure of inter-communal confrontation over socio-economic or political issues, as the May 1969 riots had so

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tragically demonstrated. It has been pointed out that the political compromise worked out by the then Alliance (comprising the United Malays National Organisation, the Malayan Chinese Association, and the Malayan Indian Congress) at the time of Independence in 1957 put a premium on caution in manipulating economic and social change.[3] Socio-economic development, however, generates its own inexorable momentum for change in the social structure, and the capacity of the society to cope with rapid socio-economic change will depend ultimately on the political leadership.

Malaysia's cultural pluralism is compounded by imbalances in population distribution along the rural-urban continuum, in employment patterns and in income distribution. Taking Peninsular Malaysia (for which data are available) as our specific reference, we see that in 1975, out of an estimated total population of 10.4 million, Malays accounted for 53.1 percent, Chinese 35.5 percent, Indians 10.6 percent and Others 0.8 percent. Out of an urban population of 3.3 million, 30 percent was Malay, 56 percent Chinese, and 14 percent Indians and Others. Looked at another way, out of a total Malay population of 5.5 million, 82 percent was rural, while the corresponding figure for the Chinese (total population = 3.7 million) was 49 percent and for the Indians (total population = 1.1 million) was 62 percent.[4] To a large extent the rural-urban population distribution reflects the socio-economic inequalities between the ethnic groups; and this, in turn, is the result of imbalances in the pattern of employment. Malays are heavily concentrated in agriculture where the per capita product is lowest among all sectors. In contrast, the Chinese are predominant in mining, manufacturing and construction where the per capita product in 1970 was estimated to be 167 percent higher than in agriculture and 60 percent higher than the average for the whole economy. Also in 1970, in terms of share-capital ownership, Malays and Malay interests accounted for 2.4 percent, Indians 1.1 percent, Chinese 27.2 percent, Others 6 percent and foreigners 63.6 percent.[5] While the per capita real income in 1970 was $1,022, one of the highest in Asia, there was a high degree of inequality in distribution. For example, about 49 percent of all households accounted for only 15-18 percent of total income, while the top 5 percent obtained almost 30 percent of the total income. About 59 percent of rural households and 25 percent of urban households were estimated to be below the poverty line.[6] Taking together all poor households, about 8 percent were Indian, 17 percent Chinese and 74 percent Malay; and in terms of per capita income, Malays received $34 per month, Chinese $68, and Indians $57.[7]

A recent study of Malaysian income distribution in the period 1957-1970[8] concluded that since 1957 there has been a trend of increasing inequality in the distribution of personal income (and still more or total private income). The incomes of the higher income groups have been rising much faster, in percentage terms, than those of the bottom 80 percent of the size distribution, but the number of "middle class" households has increased four-fold. Although all major ethnic groups have shared significantly in aggregate personal income growth, the fact remains that, on the whole, non-Malay households earn more than twice the income of Malay households. Significantly, with the emergence of a substantial Malay "middle class", inequality in income distribution within the Malay community has widened much more than within other communities. Whereas in 1957 intragroup inequality was highest for the Chinese and lowest for the Malays, by 1970 this situation was reversed. This last observation is best explained by the author himself:

> *This finding accords well with the observation that the Chinese move into modern, well-paid activities has been more rapid and broadly-based than that of the Malays (or Indians). Few Chinese males remained employed in low-productivity agricultural or service-sector jobs by the late 1960s (Chinese females so employed were generally supplementary earners). The others had gone on to better-paid jobs in the urban*

economy or, increasingly towards the end of the period, in Singapore — to whose tightening labour market they had easy access. By contrast, Malay movement into high-income jobs, largely in the public sector, was far more selective; masses of Malays — the great majority of them, in fact — remained in poorly-paid occupations such as rice cultivation, rubber smallholding, and fishing.[9]

While the economy made impressive gains since the 1950s (the Gross Domestic Product was estimated to have grown by over 6 percent per annum in real terms during 1957-1970, and by 7.4 percent during 1971-1975[10]), unemployment as a percentage of the labour force rose from about 6 percent in 1960 to about 8 percent in 1970. Unemployment has been particularly serious among urban and rural youth, while underemployment in both rural and urban areas has remained widespread.

As is well known, up to the early 1960s Peninsular Malaysia's "classical export economy" was based on the rubber and the tin industries. Because the supply and demand curves of rubber and tin are inelastic, with a tendency to shift about violently, these two industries, particularly with the depletion of known tin deposits and during periods of decline in rubber prices, were unable to absorb increases to the labour force in the 1960s. At the same time industrialisation, slow to begin with, tended to be more capital-intensive than labour-intensive so that this important new source of labour absorption was unable to provide any large measure of employment for new entrants to the labour force.[11]

It was against this paradoxical background of rising national prosperity and rising unemployment that large sections of the population, especially youth, began to feel dissatisfied with the status quo. Ironically, the socio-economic inequalities among the different ethnic groups were the result, in large part, of the level of economic development that country had achieved; and the subjective sense of relative deprivation could be attributed to the rising standard of literacy and educational attainment which had ostensibly changed the traditionally fatalistic attitudes towards life in general and employment in particular. The revolution of rising aspirations and expectations, consequent upon vastly expanded opportunities for education, was met by the counter-revolution of rising frustrations. It is generally recognised that, whatever their immediate causes, the race riots of May 1969 were linked to the social and economic inequalities which characterised the socio-economic conditions of Malaysian society. Clearly, past policies of socio-economic development were no longer politically acceptable. New policies and programmes were required to cope with the changed conditions.

Socio-Economic Needs

It was in this context that the Government launched its New Economic Policy (NEP), as embodied in the Second Malaysia Plan, 1971-1975, wherein the overriding objective was national unity. As the principal framework for Malaysia's socio-economic development up to at least 1990, the NEP has two basic objectives: to eradicate poverty and to restructure Malaysian society so that the hitherto close identification of ethnic group with geographical location and economic function will be reduced and eventually eliminated. These objectives are to be realised through rapid economic growth and, among other things, the expansion of educational and employment opportunities for all groups, particularly for the training of skilled manpower in science and technology.

The NEP implicitly recognises that the prevailing cultural pluralism is an unstable factor in Malaysian society and the Government's repeated emphases on national unity reflects its desire for greater social integration between ethnic groups.

It is noteworthy that the Second Malaysia Plan and the Third Malaysia Plan appear to make the assumption that Malaysia's plural society is segmented according to ethnic specialisation of economic functions. While in grossly simplified outline this is true, a detailed examination of the distribution of the labour force through the major categories of occupation reveals that the Chinese have a relatively balanced spread over the range of occupations. However, in the Malaysian context the operative condition is the imbalance between ethnic groups, i.e. between Malays and non-Malays. This may be seen in the table below showing employment by occupation and ethnic group in 1975 and what is hoped for in 1990.

PENINSULAR MALAYSIA: EMPLOYMENT BY OCCUPATION AND ETHNIC GROUP, 1975 AND 1990

Occupation	Malay	Chinese	Indian	Others	Total No.	Total %
			1975			
Professional & Technical	48.5	37.1	12.5	1.9	171,063	100.0
Administrative & Managerial	32.4	55.1	9.9	2.5	33,375	100.0
Clerical	38.7	48.3	12.0	1.0	180,642	100.0
Sales	25.0	65.2	9.6	0.2	318,356	100.0
Agricultural	68.3	20.3	10.5	0.9	1,463,186	100.0
Production	37.0	53.5	9.2	0.3	474,013	100.0
Service & Others	48.3	40.9	9.9	0.9	676,565	100.0
Total: No.	1,744,863	1,204,062	341,682	26,593	3,317,200	
%	52.6	36.3	10.3	0.8	100.0	
			1990			
Professional & Technical	50.0	37.2	11.5	1.3	387,016	100.0
Administrative & Managerial	49.3	39.4	9.8	1.5	73,850	100.0
Clerical	47.9	38.7	12.5	0.9	372,190	100.0
Sales	36.9	51.8	11.0	0.3	445,843	100.0
Agricultural	62.3	27.8	9.2	0.7	1,700,864	100.0
Production	52.0	38.0	9.6	0.4	1,072,128	100.0
Service & Others	52.3	35.4	11.4	0.9	1,397,209	100.0
Total: No.	2,920,900	1,923,000	565,800	39,400	5,449,100	
%	53.6	35.3	10.4	0.7	100.0	

Source: Third Malaysia Plan, 1976-1980, p. 83.

In terms of employment, the ultimate objective is roughly proportional representation or participation for all ethnic groups, reflecting more or less their proportion in the population, in all occupational categories and economic sectors. Taking this as the overall yardstick, the current imbalance is shown more clearly in the following table which gives employment by sector and ethnic group in 1975.

PENINSULAR MALAYSIA: EMPLOYMENT BY SECTOR AND ETHNIC GROUP, 1975

Sector	Malay %	Chinese %	Indian %	Others %	Total No.	%
Agriculture, Forestry & Fishing	67.3	20.7	11.1	0.9	1,534,300	100.0
Mining & Quarrying	33.1	56.9	9.5	0.5	83,700	100.0
Manufacturing	33.1	59.9	6.7	0.3	362,800	100.0
Construction	28.8	60.2	10.5	0.5	97,400	100.0
Utilities	61.2	14.0	23.8	1.0	21,400	100.0
Transport, Storage & Communications	47.2	37.5	14.6	0.7	161,000	100.0
Commerce	31.6	61.3	7.0	0.1	459,800	100.0
Services	50.6	36.5	11.4	1.5	596,800	100.0
Total: No.	1,744,800	1,204,100	341,700	26,600	3,317,200	100.0
%	52.6	36.3	10.3	0.8	100.0	
Population	5,510,000	3,687,000	1,105,000	83,000	10,385,000	
Labour Force	1,873,100	1,297,900	389,000	30,000	3,590,000	
Unemployment: No.	128,300	93,800	47,300	3,400	272,800	
%	6.9	7.2	12.2	11.3	7.6	

Source: Third Malaysia Plan, 1976-1980, p. 142.

Clearly it is the hope that, with the achievement of a more balanced ethnic representation in employment in all sectors of the economy (assuming the economy will continue to expand rapidly), there will be not only a general raising of per capita income but also a more equitable distribution of the national income between ethnic groups as well as within each ethnic group. Thus, it is expected that poverty will be eliminated and, with the mitigation of the feeling of relative deprivation, the population as a whole may learn to see that the restructuring of society is not necessarily or inevitably a zero-sum game. But the question remains whether by 1990 a fair balance can be achieved. It should be noted that throughout the Second Malaysia Plan and the Third Malaysia Plan economic parity between ethnic groups is implicitly and explicitly stated as the *sine qua non* for national unity.

A more balanced employment distribution and a more equitable distribution of income are also expected to hasten the process of the Malays and other indigenous people's acquiring a greater proportion of share capital, the aim being at least 30 percent by 1990. Given the fact that, in 1970, Malays and Malay interests represented only 2.4 percent of total share capital in limited companies (compared with Chinese 27.2 percent, Indians 1.1 percent, Others 6.0 percent, and foreigners 63.3 percent), the Malays and other indigenous people face a staggering challenge of marshalling their savings for investment. Significant progress was made in this direction by 1975, when the Malay ownership of share capital reached $768 million, representing 7.8 percent of the total share capital. This was achieved at the average annual growth rate of nearly 44 percent between 1971 and 1975.[12] Currently the strategy is for the Government to acquire, through various agencies, share capital and to hold it in trust

until such time as individuals or corporations representing Malay interests have accumulated sufficient savings for the shares to be transferred to them. One of the chief instruments for Malays eventually acquiring the 30 percent share capital is the projected creation of a Malay commercial and industrial community. This target is to be achieved "within two decades", i.e. by 1990. This entails the "rapid creation of an effective Malay entrepreneurial class" which the Government aims to achieve through a series of special policy measures, including supply of finance to budding Malaya entrepreneurs and education and training.[13]

When the restructuring of society has been accomplished, when poverty among all ethnic groups has been eliminated, when the right balance in income distribution and share capital ownership has been achieved, will national unity be assured? To be sure, all the above measures are necessary, but it is left to be seen whether they are sufficient for transforming the presently delicate balance of communal needs and demands into a unified national interest, representing a common social will and symbolizing the coming of age of a national identity.

When it was first announced, the New Economic Policy aroused no small amount of unease and distrust among the non-Malays who tended to construe (or misconstrue) the goals of poverty eradication and restructuring society to be only for the benefit of Malays and other indigenous people. The Third Malaysia Plan has stated emphatically that these aims are for the benefit of the whole nation. But the divergent perceptions of the aims of socio-economic development by the different ethnic groups and their tendency to view national problems in communal perspectives illustrate the urgent need for all ethnic groups to develop a national perspective of socio-economic problems. Just as a world economic order depends in no small way on the alleviation of poverty in the poor countries, so the progress and stability of a nation — and particularly the progress and stability of a plural society — depends upon social justice to all groups. That this obsession with communal interests on the part of all groups in Malaysia has been a cause for Government concern may be seen in the following statement in the Third Malaysia Plan:

> *The responsibility for overcoming an ethnological perspective of development goals and strategies in Malaysia lies both with the Government and the people. An over-emphasis on the special rights of the Malays and other indigenous people by public officials will generate apprehension and fear on the part of other Malaysians, leading to a sense of alienation and neglect. Equally, undue pressure on the part of other Malaysians for a steke over and above that envisaged by the NEP could be disruptive. Only an awareness and acceptance of the national character of the exercise to remedy the ethnological imbalance in the national economy and a refrain from making demands based on purely racial lines will enable the nation to devote full attention to these national goals.*[14].

One of the consequences of the restructuring of society will be the off-take of a sizeable proportion of rural Malays to the urban centres. There will thus be increasing opportunities for wider inter-ethnic interaction in occupational as well as residential settings. The mixing of peoples *per se* may or may not be conducive to social harmony. Much depends upon the social setting for group interaction. In a situation of rapid social change where there may not be clearly established norms of social conduct (because of differing value and belief systems), group friction must not be discounted. In fact, as the population becomes much more mobile, the country faces the challenge of social engineering to achieve a greater measure of social integration.

The Challenge to Higher Education

The socio-economic problems and needs as outlined here present a number of challenges to higher education in meeting its social obligations to Malaysia's plural society. If it can be assumed that the overriding objective of the country, i.e. national unity, is also the overriding objective of higher education, institutions of higher education would do well to reconsider how best, among their multiple functions, they might achieve this objective. Certainly they have to fulfill their basic socio-economic responsibility of ensuring the output of high-level manpower to meet national needs, to pursue research, whether "pure" or "applied", so as to enlarge the store of knowledge and expertise to serve the society which supports them. Given the rising costs of higher education, they also face the need to improve the efficiency of teaching and learning and to raise the quality of higher education.

In the Malaysian context one challenge which so far seems to have been unmet is that of training for social leadership for a plural society. As the future elites in the occupational and social hierarchy, higher education students in general are not consciously exposed to the psycho-dynamics of Malaysia's plural society. To be sure, they are socialized informally both inside and outside the campus to the realities of Malaysian society, but their understanding of the complexities of "race relations" is likely to be superficial and coloured by a subjective ethnic perspective. In times of crisis they are apt to react like any other person who carries with him the burden of prejudice, fear and suspicion born of ignorance of people not of his own community.

Although problems of race relations in Malaysia have not been systematically investigated (because they are deemed to be sensitive issues) the available meagre information suggests that ethnic prejudice and cultural ethnocentrism are common to all groups,[15] but according to one writer the Chinese are probably more ethnocentric than other groups in West Malaysia.[16] The harbouring of ethnic stereotypes naturally tends to influence an individual's pattern of social interaction with members of the outgroup. Under "normal" conditions persons prejudiced against other groups could choose not to mix with them except when necessary. In the course of everyday living, people adjust their social behaviour according to their own perceptions of what constitutes "good" conduct. However, the importance of stereotypes lies in their function in *inter-group* relations rather than *inter-personal* relations, particularly in their potential for fueling violence in times of crisis. The practice of scapegoating is a well-known example. The danger is that in Malaysia stereotypes, especially those which are negative, no longer bear resemblance to the changing characteristics of the younger generation.

Perhaps the most telling comment on the state of understanding of intergroup relations comes from a report on campus life of students in the University of Malaya in 1971.[17] A concatenation of events inside as well as outside the campus precipitated what amounted to a confrontation between students who were polarised along racial lines. The report attributed the polarisation to the composition of the student body, to the language barrier, and the "barrier of different economic and social values" because the bulk of Malay students came from the rural areas and the majority of non-Malay students from the urban areas, "with all the accompanying differences of values and susceptibilities".[18] Because each group tended to read the constitutional history and the political and economic realities of the country differently, their preoccupations and concerns tended to be different. The report blamed the quality of student leadership for failing "to bring about a greater sense of racial understanding, harmony and national unity among the students in the campus".[19]

The polarisation of students along racial lines in the University of Malaya in 1971 was, in many ways, a reflection of what prevailed (and still prevails) in the society at large. A study of voluntary associations in Malaysia showed that since 1957 social-structural "poliferation" rather than integration had been taking place because the increased number of voluntary associations tended to be racially exclusive rather than inclusive. In the process they reinforced the prevailing cultural pluralism instead of widening the base for social integration across ethnic lines. If major ethnic groups in a plural society are to be assimilated into functionally cohesive attitudinal and behaviour patterns, it is probably necessary, though not sufficient, that they should have common affiliations in social organisations.[20]

The development of inter-ethnic trust at the personal level has been said to be one of the most critical factors in nation-building in plural societies because it is only on this basis that constructive interaction between ethnic groups can take place, leading to the emergence of a condition characterised by a predictability in human relations.[21] On the threshold of their careers, higher education students need to develop inter-ethnic trust, and higher education itself should — indeed must — create the setting and the atmosphere for the cultivation of this quality in human relations, especially because many of these students will be in their prime as leaders in public administration, commerce, industry, the professions and in politics in the 1990s and beyond, when the new social order of a restructured society is expected to prevail. They must be in the vanguard of social change to lead ethnic groups away from the particularistic preoccupation with communal issues towards a universalistic concern with national problems. If a society is "racial" in its social relations, it is largely because its leaders are "racial" or even "racist" in their own orientations and in their approach to national problems. If the restructuring of society is not to be aborted by a mere rearrangement of the old primordial group loyalties, the emerging leaders need to restructure their own attitudes and values to reflect the growth and maturity of a new generation of true *Malaysians* who will aspouse and defend universalistic norms in public as in private life.

Because of their actual as well as potential influence on the future leaders of the society, institutions of higher education have the rare opportunity to shape if not determine the quality of social leadership. Perhaps in this way higher education faces the unique challenge of providing the capstone in the restructuring of Malaysia's plural society.

NOTES

1. Cultural pluralism is a condition in which two or more major cultural traditions differentiate the social life of the population. Some of the major indicators of cultural heterogeneity are family and kinship structure, marriage customs, property laws, religion and language. Where cultural pluralism prevails there will be different forms of these institutions, and the culturally distinct communities will differ in their internal social organisation, institutional activities, belief and value systems. See M.G. Smith. *The Plural Society in the British West Indies*, Berkeley and Los Angeles: University of California Press, 1965, p. 14. Thus Malaysia's plural society is characterised by the co-existence of three major cultural traditions, Malay, Chinese, and Indian, represented by the corresponding ethnic groups, each of which maintains its own institutional activities and adheres to its own belief and value systems.

2. The concept "plural society" is generally attributed to J.S. Furnivall, a political economist, who first used the phrase in the following passage:

   "In Burma, as in Java, probably the first thing that strikes the visitor is the medley of people — European, Chinese, Indian, and native. It is in the strictest sense a medley, for they mix but do not combine. Each group holds to its own religion, its own culture and language, its own ideas and ways. As individuals they meet, but only in the market-place, in buying and selling. There is a plural society, with different sections of the community living side by side, but separately, within the same political unit. Even in the economic sphere, there is a division along racial lines". *Colonial Policy and Practice,* London: Cambridge University Press, 1948, p. 304. See also his earlier book *Netherlands India: A Study of Plural Economy,* London: Cambridge University Press, 1939.

3. Maurice Freedman, "The Growth of a Plural Society in Malaya", *Pacific Affairs,* Vol. 23, No. 2, June 1960.

4. Malaysia, *Third Malaysia Plan, 1976-1980,* Kuala Lumpur: Government Printers, 1976, p. 150.

5. *Third Malaysia Plan,* p. 6.

6. The poverty line is defined "to cover minimum food requirements and minimum needs with respect to clothing, housing, consumer durable goods and transport services to sustain a decent standard of living". *Third Malaysia Plan,* p. 5, footnote. See also *Mid-Term Review of the Second Malaysia Plan, 1971-1975,* Kuala Lumpur: Government Printers, 1973, p. 3.

7. *Third Malaysia Plan,* p. 5.

8. D.R. Snodgrass, "Trends and Patterns in Malaysian Income Distribution, 1957-1970", in David Lim (ed.), *Readings on Malaysian Economic Development,* Kuala Lumpur: Oxford University Press, 1975, pp. 264-265.

9. Snodgrass, *op. cit.*, p. 264.

10. *Third Malaysia Plan,* pp. 2-3, 11.

11. David Lim, "The Economic, Political and Social Background to Development Planning in Malaysia" and "Industrialization and Unemployment in West Malaysia", in David Lim (ed.), op. cit.

12. *Third Malaysia Plan,* p. 184.

13. *Second Malaysia Plan, 1971-1975,* Kuala Lumpur: Government Printers, 1971, pp. 158-159; *Third Malaysia Plan,* pp. 192-197.

14. *Third Malaysia Plan,* p. 93.

15. Peter Wilson, *A Malay Village and Malaysia,* New Haven: Human Relations Area Files, 1967.

16. Alvin Rabushka, "Racial Stereotypes in Malaya", *Asian Survey,* Vol. XI, No. 7, July 1971.

17. *Report of the Committee appointed by the National Operations Council to study Campus Life of Students in the University of Malaya*, Kuala Lumpur: Government Printers, 1971. The report is often referred to as the "Majid Report", after the Chairman of the Committee, Dato Dr. Haji Abdul Majid bin Ismail.

18. *Ibid.*, p. 30.

19. *Ibid.*, p. 31.

20. Stephen A. Douglas and Paul Pedersen, *Blood, Believer, and Brother: The Development of Voluntary Associations in Malaysia*, Ohio University, Center for International Studies, Papers in International Studies, Southeast Asia Series No. 29, 1973, p. 104.

21. Lucian W. Pye, *Politics, Personality, and Nation Building*, New Haven and London: Yale University Press, 1962. Chapter 19, "The Prospects for Nation Building", pp. 285-301.

SOCIO-ECONOMIC NEEDS AND PROBLEMS: CHALLENGE TO HIGHER EDUCATION IN SINGAPORE

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Research in developing and developed countries suggested that there is a close correlation between education and economic growth.[1] Although it is difficult to identify the cause-effect relationship of the two variables, research findings suggested that education is an essential factor determining the process of development in the developing countries.[2]

Education, particularly higher education, must serve a purpose. The nature of the purpose varies, however, among societies. Ideally higher education in Singapore should play a vital role in national development by producing high-level manpower to meet the needs of the society; by serving to inculcate in the people, particularly the youths, proper values and attitudes in a direction favourable to social and economic development; and by providing services to the society through research, consultation and community activities of the academics in institutions of higher learning. Could higher education in Singapore perform these strategic tasks in the processes of rapid industrialization and social change? This paper attempts to examine the question by focusing on the following aspects: (a) historical background of higher education in Singapore; (b) the responses of higher education to rapid industrialization and social change; (c) training and manpower needs; and (d) research, service and social involvement of academics in the institutions of higher learning.

I. Higher Education in Singapore

Tertiary education in Singapore began rather late and slowly. It was not until after the Second World War that a full-fledged university was established. In 1905 the Straits Settlements and Federated Malay States Medical School, which was the first tertiary institution in Singapore, was opened. The school was renamed King Edward VII College of Medicine in 1925. In 1928, Raffles College was founded to teach arts and science. These two institutions were merged in 1949 to become a full-fledged university which was named the University of Malaya and located in Singapore. In 1958, a new division of the University was established in Kuala Lumpur with an equal status to the original division in Singapore. In 1962 the institution was split into two autonomous universities. The Kuala Lumpur division retained the name of the University of Malaya while the Singapore division came to be known as the University of Singapore.

In addition to the University of Singapore, there are four other institutions of higher learning. These are Nanyang University (1956), the Singapore Polytechnic (1958), Ngee Ann Technical College (1963) and the Institute of Education (1973).[3]

The University of Singapore and Nanyang University provide academic and professional training leading to degree courses in arts, social sciences, law, science, medicine, dentistry, pharmacy, engineering, architecture, accountancy, and commerce. The Institute of Education is responsible for training primary and secondary school teachers, and offering courses leading to the degrees of Masters of Education and Ph.D. in education. These degrees are, however, awarded by the

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University of Singapore. The Singapore Polytechnic and Ngee Ann Technical College provide technician training and offer diploma courses in engineering and commerce.

All these tertiary institutions, except Nanyang University and Ngee Ann Technical College, were originally founded as public institutions and were fully financed by the government. Nanyang University and Ngee Ann Technical College were originally founded as private institutions in 1956 and 1963 respectively. The two institutions underwent a series of re-organization and were eventually made public educational institutions in 1968 and to be brought under the close control of the government. At present, all the five tertiary institutions are financially supported by the government and are under the jurisdiction of the Ministry of Education.

II. Responses to Rapid Industrialization and Social Change

Over the past two decades, Singapore has experienced rapid industrialization and social change. From a basically trading community, Singapore has now become a leading manufacturing, servicing and financial centre in Southeast Asia. During the period 1960-1976 Singapore's GDP increased four times, with an annual growth rate of 12.9 per cent at current price and 9.1 per cent at constant price. The per capita income rose from S$1,330 in 1960 to S$6,329 in 1976. Singapore joined the ranks of developed countries in 1969 when its per capita income reached US$1,000, the figure which is usually used as an indicator to differentiate developing and developed countries.

Manufacturing and construction are the two most significant sectors in the process of Singapore's rapid industrialization, which achieved the highest growth rates at 12.4 per cent (at constant price) per year for the manufacturing sector and 12.9 per cent for the construction sector during the period 1960-1976. The manufacturing share of Singapore's GDP had also increased from 13.2 per cent in 1960 to 21.2 per cent in 1976. Concomitant to the rapid growth of the manufacturing sector is an increase of labour force engaged in manufacturing. In 1976, the manufacturing sector employed a total of 234,000 persons, which consisted of 26.9 per cent of the total labour force.[4]

Rapid industrialization in recent years has resulted in an increasing demand for engineers and other professional personnel. This required dramatic changes in the education system, particularly the tertiary education. Enrolment plans, curriculum development and training programmes of tertiary institutions had to and must therefore be adjusted to meet the needs of the rapidly changing society.

Concomitant to industrialization is the rapid urbanization process which has taken place in Singapore. The most significant outcome of rapid urbanization is probably the drastic movement of the population into high-rise public housing. The government had set up the Housing and Development Board (HDB) in 1960 to tackle the problems of housing shortage and sub-standard housing conditions of urban settlements by undertaking large-scale public housing programmes. By March 1976 the HDB had built a total of 234,488 units of high-rise public housing flats, and some 1,158,000 persons or 51 per cent of the total population in Singapore were residing in public housing estates. It is estimated that by 1980 about 65 to 70 percent of the population will be living in HDB flats. Large-scale public housing programmes in Singapore not only solve the housing shortage problem but also play an important role in the redistribution of income in the society.

As more and more people are moving into high-rise flats and the living environment of Singaporeans is continuously changing, problems of adaptation to high-rise living has become more complicated. There are increasing numbers and rates of divorces, suicides, mental illness, juvenile delinquents, drug addicts and offenders, and other social pathologies in recent years. Some social scientists attributed the increasing incidents of social pathologists to high-rise living and rapid urbanization.[5]

In the course of rapid industrialization and urbanization, Singapore has made every effort to introduce modern technology and to stimulate industrialization with the aim of achieving high growth rates of the economy. Concomitantly, new values and social norms have been introduced to and adopted by the population. The rapid social and economic development in Singapore has solved some social and economic problems; but it generated new ones as well. Research to study the problems and to identify options for tackling these problems is essential and useful for short-term and long-term planning for national development in Singapore. Academics of the tertiary institutions could play a very important role in this respect. Have the academics taken up the responsibility in playing such a role?

III. Training and Manpower Needs

Between 1960 and 1976, total tertiary enrolment increased from 8,171 students to 20,594 students. In 1976, 3.5 per cent of the relevant age-group was enrolled in the two universities. A futher 4.6 per cent of the same age-group was enrolled in other institutions of higher learning. During the period 1960-1976, government expenditures on tertiary education had also increase from a total of S$5.8 million in 1960 to S$60 million in 1976 for the five tertiary institutions. For the same period, expenditure per student had increased from S$894 to S$4,882 for students of the two universities, from S$526 to S$1,280 for students of the two technical colleges, and from S$619 to S$5,454 for students of the Institute of Education (formerly known as the Teachers' Training College).[6]

In recognition of the implications of the expanding tertiary education and the increasing government expenditures on tertiary education, the Government has taken necessary steps, particularly since 1968, to bring all tertiary institutions under close control to ensure that tertiary education meet the needs of the society. Since 1968, the government and the tertiary institutions have worked closely together in the planning and administration of higher education. As pointed out by Mr. George Bogaars, the Permanent Secretary for Finance, "to talk of university autonomy and independence today is to talk of a theoretical possibility but a practical impossibility".[7] Moreover, the university must provide education and training which are related to the needs of the community. Otherwise, "it would very quickly be out of business because its graduates would soon find themselves unemployable, and whosoever is providing the finances of the university would soon put a stop to the matter".[8]

The planning of tertiary education, particularly curriculum development and enrolment plans, has always been adapted to changing manpower needs. As a result of the rapid industrialization process taking place in the past ten years, there has been a great demand for technicians, engineers and other professional personnel. Measures have been taken by the tertiary institutions to respond to the demand.

First of all, the tertiary institutions have reorientated their curriculum and training programmes. New relevant courses have been introduced and engineering

and technical education have been emphasized. For example, in 1969 three new faculties were added to the University of Singapore, viz., the Faculty of Engineering, the Faculty of Architecture and Building, and the School of Accountancy and Business Administration. In 1968, the former Ngee Ann Institute of Technology and Commerce was reconstituted as the Ngee Ann Technical College to provide technician training.

Entries to tertiary institutions in Singapore are highly selective. Moreover, the government's policy is to encourage young people to take up technical and professional training rather than academic training. Consequently, the enrolment in the two technical colleges increased more than 200 per cent from 1966 to 1976, but enrolment of the two universities increased only 80 per cent during the same period. It is expected that the enrolment of the technical colleges will rise rapidly in the next ten years to meet manpower demand.[9] On the other hand, enrolment in the two universities will increase relatively slowly.

In the universities, there has been a rapid shift of the student population from older, traditional faculties to new, professional faculties. For example, total enrolment in the Faculty of Arts and Social Sciences and the Faculty of Science in the University of Singapore dropped from 62 per cent of total university enrolment in 1968/69 to 33 per cent of total university enrolment in 1977/78. Similarly, in Nanyang University the enrolment in the faculties of Arts and Science fell from 72 per cent of total enrolment in 1968/69 to 57 per cent of total enrolment in 1976/77. Students are informed of employment prospects and enrolment plans have always been adjusted to meet the manpower needs of the economy.

According to the official manpower forecast, there will be a great demand for graduates of the technical colleges and "demand and supply of university graduates will be fairly evenly matched in the next ten years".[10] This does not, however, apply to all types of university graduates. There will be a shortage of engineers, doctors, dentists, architects and surveyors. Arts, social sciences, science, accountancy and law graduates will most likely be in excess supply.[11] The future trend of tertiary education in the near future will, therefore, be influenced by this manpower projection.

Although development trend of tertiary education must be guided by the manpower needs of the society, the function of tertiary education, especially university education, should not be confined to training manpower. An equally important, if not the more important function of tertiary education is to educate and to inculcate in young people proper values and attitudes. Tertiary institutions in Singapore seem to have made very little contribution in this respect. College and university graduates in Singapore today, like most young Singaporeans, are very much self-centered, materialistic, money-minded, and generally has a lack of social concern.

IV. Research, Service and Social Involvement

As discussed in the preceding section, tertiary institutions in Singapore are responsible for training high-level manpower and elites. The teaching function of higher education in Singapore has been geared to adapt to the manpower needs of the economy. But, tertiary institutions are not mere producers of trained persons. They are not expected to confine themselves to the transmission of established and confirmed knowledge to students. They are expected to create new and important knowledge through research.

The problems of rapid industrialization, the socio-psychological implications of urbanization, the difficulties of adaptation to high-rise living, the increasing incidents of social pathologies, the impersonalization process of modern life, and the problems of urban poverty are, among many others, pressing problems of today's society. Only through research can these problems be analyzed and understood in the proper perspectives.

Tertiary institutions, especially the universities, have better facilities and expertise than any other agencies to conduct pure and applied research. Today, we have 1,069 teachers in the two universities and another 681 teachers in the other tertiary institutions. In theory, all of them should do research as it is an essential function of the tertiary teachers. But, in practice only a small minority of them do so. If we press the question further and ask, how many of the research projects undertaken by academics of the tertiary institutions are relevant to national needs and interests, the answer must be very disappointing.

Let us first confine our discussion to research in the social sciences and direct the discussion to problems related to research priorities, the application of research, and the social responsibility of researchers. Research is generally at the discretion of the researcher, but research interests are usually influenced by factors such as the availability of finance and facilities, public concerns and fashions, and research interests among colleagues. Academics are generally more concerned with the academic values of research than with the practical applications to social needs. They tend to select those research projects which can result in publications for academic purposes because academic publications are the basic criterion on which the university teacher is evaluated by his colleagues, the university and people of the same profession.

Research on the kinship system in Fuji, the aborigines in Australia, the minorities in the United States, or the religions in Africa may have no relevance at all to our national needs and interests. They may, however, have significant academic values. Articles derived from research of this nature are also more likely to be accepted for publication by international, professional journals than those articles dealing with practical problems in Singapore. Thus, many academics are doing the sort of research having publication value, and only few academics are doing research directly relevant to practical social and economic problems of the society. The advanced countries, especially those big and rich countries, have abundant resources, they can therefore afford to finance all kinds of research, whether they are of academic values or of practical applications. Singapore is a small country with limited resources. Resources must be optimally used. Thus, academics should recognize the needs of the society and conduct more research orientated towards development needs. This can be achieved under the following circumstances:

a. There is a greater awareness of social issues and social responsibility among academics:
b. The government, tertiary institutions, and funding agencies should give priorities to support those research projects which have direct relevance and application to development needs; and
c. The importance of research which have practical applications to national needs should be recognized by the tertiary institutions when they evaluate the performance of their staff.

Academics are, in principle, absolutely free to conduct their research, to interpret the research findings and to release the research results. This can be done

without any serious problems in countries like the United States where views and opinions of academics usually attract little attention of the public and have very little political impact. Conflicting views of academics can at best stimulate intellectual discussions and debates among academics. In Singaproe, research findings and views of academics usually attract great attention of the public and of the mass media. It is, therefore, important that academics should realize their social responsibility and be concerned with the possible implications when they express their views or release their research results to the public and the mass media.

For immediate and long-term planning, all governments need social information. How many HDB flats are needed each year? What are the main considerations of foreign investors? What are the social implications of alien workers? Why is there an excessive job mobility in most factories? How many technicians and engineers are needed every year? What are the reasons for the increasing numbers of divorces, suicides, drug offences and other social pathologies? The list is infinite. Such information gathering can be done by the government itself, by tertiary institutions or by other research agencies. Most government agencies have their own research units to undertake some research projects for purposive actions. But, most research units in government agencies are constrained by the lack of research facilities and expertise.

Tertiary institutions, especially the universities, have better research facilities and expertise. They can provide the government with a means of promoting and conducting research aimed at solving long-term social and economic problems. The task could be undertaken by the university as part of its normal routine, or by setting up a joint research centre or unit with the government, or by inviting academics to serve as consultants to research units of the government or to specific research projects undertaken by government agencies.

But, when bureaucrats turn to academics for assistance, misunderstandings very often rise. First of all, bureaucrats and academics do not generally have shared purposes. The bureaucrats want quick solutions to urgent problems, while the academics' main interests are in publishing interesting data or resolving theoretical puzzles. Secondly, the academics are most likely to insist on a more sophisticated methodology and sometime may also include the administrators and their organization as a variable to be investigated — all this is usually considered not practical by the bureaucrats. Thirdly, the bureaucrats are very likely to insist on the confidentiality of the research and impose restrictive conditions for the use of research findings, which are usually objectable to the academics.

Apart from teaching and research, academics of tertiary institutions in Singapore can make another contribution to the task of national development by directly participating in the process of development in the forms of being seconded to serve in government agencies, serving as consultants or committee members in government agencies, providing social services to the community, or participating in community and voluntary organizations.

Social participation by academics in providing direct social services to the community in Singapore is still below expectation. This is reflected by repeated statements made by Ministers recently in persuading the academics to leave their ivory tower and to participate in community activities. In response to this call, there are now more academics participating in the community. According to a recent survey, about 72 per cent of the professionals and university academics are members of social and voluntary organizations, and 32 per cent of them are committee

members of governmental and statutory bodies, which could have direct or indirect influences on government policies.[12]

In the process of national development, higher education has a vital role to play. Tertiary institutions in Singapore are responsible for training professionals, experts, managers, and other high-level manpower. The planning of higher education has always been geared to adapting to the manpower needs of the society. Tertiary education has been very successful in this respect when it is evaluated by the employment prospects of college and university graduates. There are, however, other important functions of tertiary education as well. Training is only one aspect of the teaching function — to educate students to be morally and socially responsible and to inculcate in them proper values and attitudes is another aspect of the teaching function. In addition to the teaching function, research and social services of academics are other important functions. For tertiary institutions to play a meaningful role in national development, research should be orientated towards those areas which could have practical relevance to national needs. Academics should, at the same time, step out of their ivory tower and be more actively involved in community activities and in the development process. These are the very areas where higher education could make direct contribution to social and economic development, but it has however not yet shown impressive accomplishments in these areas in Singapore.

NOTES

1. See, for example, R.M. Solow, "Technical Change and the Aggregate Production Function", *Review of Economics and Statistics,* Vol. 39 (August 1957); F. Harbison and C.A. Myers, *Education, Manpower and Economic Growth,* New York: McGraw-Hill, 1964.

2. See Peter S.J. Chen, *Development Complexity: East and Southeast Asia,* Singapore: University Education Press, 1971; Myron Weiner, ed., *Modernization: The Dynamics of Growth,* New York: Basic Book, Inc., 1966.

3. The Institute of Education was formerly known as the Teachers' Training College which was founded in 1950.

4. Ministry of Finance, *Economic Survey of Singapore 1976,* Tables 1.1, 1.6 and 2.2.

5. See, for example, Riaz Hassan, *Families in Flats,* Singapore: Singapore University Press, 1977.

6. J.F. Conceicao and Ahmad Matter, "Educational Planning and Some Population Considerations", in Peter S.J. Chen and James Fawcett, eds.,*Public Policy and Population Change in Singapore,* New York: The Population Council, 1978.

7. George E. Bogaars, "The University and the Government", in Yip Yat Hoong, ed., *Roles of Universities in Local and Regional Development in Southeast Asia,* Singapore: RIHED, 1973, p. 73.

8. *Ibid.*

9. *Employment Prospects in Singapore 1977-1986*, Singapore: Ministry of Finance, 1977, p. 8.

10. *Ibid.*

11. *Ibid.*, pp. 8-10.

12. Peter S.J. Chen, "Professional and Intellectual Elites in Singapore", in K.E. Shaw, *et al.*, *Elites and National Development in Singapore*, Tokyo: Institute of Developing Economies, 1977, p. 70.

THE UNIVERSITY AND SOCIETY IN INDONESIA
A COUNTRY REPORT

Harsja W. Bachtiar, Ph.D.*

The universities in Indonesia, in spite of other more lofty pronouncements, have been specifically instituted to provide higher education facilities for individuals who are expected to occupy positions which require professional knowledge and which are primarily located outside the universities themselves. The universities have been brought into existence to train individuals who are expected to contribute to the welfare of the society. The first few faculties were, in fact, established as a consequence of an evolutionary development of antecedent lower level educational institutions, progressively upgraded to reach the higher education level, and as a consequence of the development of Indonesian society as a whole, manifested in an increase in structural and functional differentiation which demanded a wider range of programmes of higher education at an increasingly higher level.

The first Faculty of Medicine in Indonesia, for example, was established, still in the colonial era, as a stage in the development of modern medical education which was initiated in 1851 with the establishment of a small training programme for native medical personnel, attached to the Dutch military hospital in Jakarta (then more known as Batavia). This initial one-year programme had 13 pupils who received instruction in knowledge and skills pertaining to vaccination from Dutch military physicians. They were trained to participate in the eradication of epidemics among the indigenous inhabitants of Java. The programme was soon upgraded to become a two-year programme to enable the graduates to deal also with common diseases and to practice small surgery. In 1864 the programme was upgraded to become a three-year programme, offering a total of 27 subjects, the graduates to become known as *dokter-djawa* (Javanese physician).[1]

In 1902 the programme became a semi-academic medical school, designated as *School tot Opleiding voor Inlandsche* (later: Indische) *Artsen* (School for the Training of Native Physicians), abbreviated and more known as STOVIA. The school was detached from the military hospital and given its own buildings, including residential quarters for 200 students. The graduates acquired the degree of *Indisch Arts* (Indian physician), a local version of the modern general physician. In 1914 a sister institution, designated as *Nederlandsch-Indische Artsen School* (School for Netherlands Indian Physicians), abbreviated as NIAS, was established in Surabaya.[2]

Finally, in 1927, the first full-fledged Medical School, recognized as on a par with the Faculties of Medicine in the Netherlands, was established in Jakarta, while the older STOVIA was closed in 1933. The present Faculty of Medicine, now part of the University of Indonesia and still located where it was established in 1927, is, of course, even more developed, more complex, more specialized than its predecessors.[3] This evolutionary development of medical education occurred to a large extent as a response to the increasing demands of the surrounding Indonesian society, gradually having become more aware of the benefits of modern medical facilities in the continuous attempt to restore its sick members to health or normality.

The first Faculty of Technology, established in 1920, and the first Faculty of Law, established in 1924, were also instituted to meet the demands of society for

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competent personnel, more specifically to meet the demands of the expanding responsibilities in the field of public works, the judiciary, and general government administration. The Faculty of Law, it should be noted, also had a socio-economic academic programme.[4]

The first Faculty of Letters, established at the end of 1940, was instituted to provide the necessary academic training for individuals who were expected to occupy existing social positions which required knowledge in the social sciences and the humanities, particularly with respect to the cultural and societal realities in Indonesia itself. The faculty was, furthermore, also assigned with the responsibility to coordinate and promote research activities undertaken to develop knowledge on Indonesian cultural and social phenomena (Indonesian languages, Indonesia history, Arabic language, Islamic religion, and Indonesian social structures), knowledge needed to facilitate more effective colonial control in the relevant parts of the Indonesian archipelago; and with the responsibility to create a center for the dissemination of Dutch culture (Dutch language and literature).[5]

The societal needs to which the fifth pre-World War II faculty, the Faculty of Agriculture, established in 1941, was expected to respond to are, of course, obvious and therefore need no further elaboration.

At present, the close relationship between the universities and the society in Indonesia can perhaps be symbolized by the participation of a significant number of university professors in the central Government as Ministers in the Cabinet, and many of their colleagues as Secretaries General of Ministries, Directors General, Directors, and occupants of other high-level Government positions. The case of Prof. Dr. Ali Wardhana who teaches at the Faculty of Economics, University of Indonesia, and is Dean of the Faculty, but at the same time serves as Minister of Finance characterizes the pattern of relationship as is the case of Prof. Dr. Mochta Kusumahatmadja who teaches at the Faculty of Law, Pajajaran University, Bandung, but at the same time serves as Minister of Justice. The present Cabinet is dominated by 12 university professors and an additional smaller number of other academics.[6]

The present report attempts to sketch a few salient problems of the interrelationships between the universities and society in which they are located in order to illuminate the problem of social commitment of higher education in Indonesia.

The Universities

In the present report the category of "universities" refers not only to the 27 state universities and a smaller number of private universities, but also to the 10 institutes of teachers training and education (IKIP), the 2 institutes of technology, and 1 institute of agricultural sciences. In the present context of discussion, the category does not include other institutes of higher education, such as the state institutes of Islamic studies, the many service academies, and specialized colleges.

The main function of the universities is, as indicated earlier, to train individuals to become technically competent in the application of scientific and scholarly knowledge to practical affairs. This competency is associated with distinct academic degrees in such a manner that in reality the degrees tend to assume more importance than the competence and knowledge these degrees are supposed to symbolize.

In Indonesia the universities are geographically dispersed, from Banda Aceh in the Northwest to Jayapura in the East, with the universities in Jakarta being closest to the main sources of facilities, centers of planning and decision-making, and foci of problem identification and formulation.

Each of the universities constitutes a multiple and complex set of interactions and purposes which show great variety of content and form. The philologist who is engaged in the study of Javanese manuscripts undertakes activities which are quite different from the type of activities undertaken by bio-chemists in their laboratories. The scholar of philosophy may not be able to comprehend what the physicist tries to calculate on the blackboard. The economist may have no notion at all of the complexity of linguistics. The administrator may have serious difficulties in explaining to the single minded researcher why funds are not available for particular types of expenditure which the researcher thinks are crucial to the success of his scientific investigation. And the students may not understand why their professor, who was suddenly called away to attend an unexpectedly convened Cabinet meeting, gives priority to governmental affairs and therefore does not appear in the classroom.

The universities vary in age, dating from 1920, when the oldest faculty of the Bandung Institute of Technology was established, through the late 1960's, when the youngest provincial universities came into existence, to 1975, the year of establishment of the "11 of March" state university at Surakarta. The universities vary in size, from a university with not more than a few hundred students to a university with more than 16 thousand students. The universities vary in organizational complexity, or division of labour, from a university with barely 4 faculties to a university — Gadjah Mada University — with 18 faculties.[7] The universities vary with respect to the competencies of their academic personnel, a few universities having a respectful number of Professors and holders of Doctors degree while others having practically none at all. A number of universities have Professors as President, many are presided over by a Senior Lecturer, but still others have to be satisfied with the formal occupancy of the Presidency by the Governor of the province where the given university is located, a person who may not be much interested in academic affairs.

Special mention ought to be made about variation in patterns of recruitment of both instructors and students, particularly in relation to ethnic origin. The leading universities in Java work with an ethnically heterogeneous teaching staff and student body, and therefore tend to be committed to Indonesia as the societal community of orientation. Many universities, however, work with an ethnically homogeneous teaching staff and student body, or with a teaching staff and student body which are dominated by members of a given ethnic society. These universities tend to be more committed to serving the interests of the local ethnic society, or local region, where these universities are respectively located, raising the problem of high priority loyalty in a larger society where national integration is still a fundamental real problem.[8]

The Personality Level

On the level of personality, the university is expected to provide its mass of searching students with scientific or scholarly knowledge which would transform them into persons with a measure of competency and skills in their respective discipline and with a commitment to serve their nation and state.

When entering the university, the students have left their school age and, insofar as it has not yet occurred, begin to free themselves from parental control. At this

stage of their psychosocial evolution, the students seek confirmation in their new personal identity by linking themselves to persons whom they regard as significant and whom accordingly they can respect and to ideas which they regard as personally meaningful. In the leading universities, such as the University of Indonesia, the Bogor Institute of Agriculture, the Bandung Institute of Technology and Gadjah Mada University, as well as in the universities of such major cities as Jakarta, Bandung, Yogya, Surabaya, Medan, and Ujung Pandang, a great many students live away from their parental homes, in dormitories or in other types of places of lodging, facilitating exposure to new relationships of solidarity and to adoption of new ideas, new values, new norms of behavior.

Their loyalty to parents and other kins would be expanded, and in some cases replaced, by the inclusion of persons who otherwise would have remained outsiders, aliens.

Their commitment to traditional beliefs and values, inherited by virtue of being a member of a given family group in a given ethnic society, would undergo changes, radical changes for some individuals.

The empirical question, then, becomes: what are the objects of the new commitments of these students?

The formal pronouncements, made mainly by university authorities, professors and other teaching personnel, and believed in a vague way by the interested general public, state that the students are molded to become honest seekers of truth and to become persons who are committed to scientific originality and excellence. A number of selected universities were, for a while to be sure, formally bestowed with the right to call themselves and be called Centers of Excellence.

But do the universities really motivate the students to become honest seekers after truth? Most students are given no alternative but to try to memorize what their professors and other instructors transmit to them through mostly uninspiring lectures, textbooks which are written in a foreign language — a language which is difficult to understand —, and/or textbooks which, although written in the Indonesian language, are mostly not better than more extended outlines of lectures, frequently written without any proper regards for grammatical rules and replete with unexplained terms and phrases, or texts which assume the form of a listing of detailed information covering "the entire field". Most of the teaching personnel do not want to argue with students; they do not want to listen to students; they have no interest in their students' problems.

It is practically a miracle that a great many relevant factors in one way or other converges in such a manner that in spite of the bleak picture of the predominant pattern of relationship between teaching personnel and students, every year a number of students does graduate as promising young men and women who are genuinely motivated to perform the type of activities which are expected of responsible citizens who are university graduates: persons who have certain professional competence, a deep commitment to the prevailing societal values held dearly by its members, and a strong awareness that knowledge only has but little social value if it is not translated into action.

On the other hand, it cannot be denied that there has always been an awareness that the university should not limit its scope of interest to scientific and scholarly activities in the form of teaching, research and public service but should also be concerned with problems of personality development of the students. There has always

been the idea, perhaps as a consequence of the revolutionary experience in the period of 1945-1950 and the succeeding strong political consciousness of the educated portions of Indonesian society, that the university should not only produce scientists, scholars, and other professionally competent persons, but produce academically or professionally competent persons with certain personality characteristics, such as a certain sense of responsibility as adult members of the Indonesian nation and citizens of the Republic of Indonesia.

This sense of responsibility and social commitment has been and still is the generalized goals of such required educational programmes as the so-called "Studium Generale" at Gadjah Mada University, replicated by some other universities; courses in national ideology, religion, and military knowledge; and lately the basic social science, basic humanities, and basic natural science general education courses in which the emphasis is not on the transmission of information but rather on a creative attempt to develop the students' awareness of his physical, social and cultural environment.[9] It is hoped that these general education courses would strengthen the social commitment of those who have studied at a university.

The Social System Level

The university can be conceived as a network of roles, each associated with certain expected patterns of activities. A given set of roles, such as the multiplicity of roles found within a given faculty, may be more closely related to each other than the other roles so that within the university a number of such cluster of roles can be found, such as the cluster of roles which in one way or other are related to the medical sciences and the cluster of roles which in one way or other are related to legal knowledge.

Society too can be conceived as a network of roles with an even greater number of clusters of roles and with the universities constituting particular such clusters of roles.

University participation in development activities other than the activities which produce development of the system of higher education itself can be conceived as participation of university personnel — members of the teaching staff as well as students — in roles which are located outside the university concerned, with the understanding that deliberate use is made of scientific or scholarly knowledge in the enactment of activities associated with these roles. A given lecturer may participate in the enactment of a great number of roles outside his university, such as the roles associated with the status of husband, father, tennis player, or purchaser of goods at the market place, without utilizing his specialized academic knowledge. But the same lecturer may deliberately participate in the enactment of particular roles outside the university precisely because he is conscious that he can utilize his specialized knowledge, or whatever knowledge he acquired from his academic training, to produce concrete results, held to be beneficial to other people.

In Indonesia, quite a number of university academics participates in the roles which involve decision-making activities outside their respective university, such as are being done by members of the teaching staff who also occupy decision making positions in the Cabinet, in government agencies, or in private corporations. Quite a number of university academics participates in roles which involve legislative activities, such as are being done by a number of university presidents, professors and other members of the teaching staff as well as students who, in addition to their activities on the campus, serve as Members of Parliament, members of the authorita-

tive People's Consultative Assembly, or members of the provincial house of representatives. Quite a number of university academics also participates in the roles which involve advisory activities — not necessarily for the benefit of the Government — or which involve the enlightenment of the interested general public through articles published in newspapers, or other mass media publications and through public lectures.

Not only members of the teaching staff but also quite a number of students is involved in socially constructive roles outside the university. And again, some of these roles have been deliberately chosen because the students involved feel that their knowledge as budding men of ideas might be fruitfully utilized in the performance of these particular roles. Groups of students spend months in remote villages as participants of the Kuliah Kerja Nyata (KKN) field programmes.[10] They offer their knowledge and ideas, skills, energy and time to village communities where their services are much needed in the general endeavour to improve the welfare and well-being of the peasantry.

An inconspicuous but significant number of students assumes the role of journalists by attaching themselves to newspapers, including the largest circulation newspapers, or to periodicals; or by producing their own mass media publications. Gunawan Muhammad, chief editor of *Tempo* weekly, for example, started his journalistic activities as a student and managed to develop his periodical as the most influential general information weekly, very much like *Time* and *Newsweek* in the USA. The active participation of students in journalistic ventures is one of the most important contributing factors which have led to the prominence usually given by practically all newspapers in Indonesia in reporting on student political activities and ideas. The mass media has become an effective instrument for the dissemination of ideas, often very critical ideas, which reflect the sentiments and thoughts of the sensitive students who are socially committed to serve as the consciousness and conscience of the people.

It is not necessary to elaborate on the fact that participation in student demonstrations and other political activities can also be a manifestation of social commitment on the part of the student participants, whatever the causes and outcome of these activities.[11]

The Cultural System Level

The universities in Indonesia do not only constitute high concentrations of specialized knowledge but also high concentrations of beliefs, values, empirical knowledge, and ideas which are especially meaningful to members of the Indonesian societal community.

Unfortunately, the number of persons who are active members of the Indonesian societal community is still smaller than the total number of persons who by law are regarded as Indonesian citizens. Many of the more than 130 million people who live within the boundaries of the republic are still mainly oriented to their respective ethnic culture. For these masses of people the inherited ethnic culture, which might very well be manifested in more modern forms, is still more meaningful than the newly institutionalised Indonesian culture. Since beliefs, values, norms, empirical knowledge and other ideas exercise much control on the sentiments and activities of the persons involved, defining as it were what they should do and in what manner, the analytical distinction between the Indonesian national culture and

the multifarious ethnic cultures — each associated with a given home territory — is of crucial importance.

It is, of course, also necessary to distinguish the major religions in Indonesia (Islam, Protestantism, Roman Catholicism, Hinduism, Buddhism) as distinct cultural systems. Therefore, the empirical questions to be asked and answered are:

a. Which of the prevailing cultural systems tends to control university academics and students in the performance of roles outside the university?
b. Which cultural system constitutes the basis of their social commitment and, in accordance with the relevant beliefs, values, norms, knowledge, and ideas, who, or which people, constitute the object of their commitment? In other words, who benefits from their culturally prescribed social commitment?

The universities in Indonesia are also faced with the much larger problem of whether these universities consider themselves mainly as preservers, interpreters, transmitters, developers, producers, or critics of the existing cultural systems, including scientific and scholarly knowledge, in Indonesia. Whatever the conception of their main function is, their academics and students may be deeply socially committed to whatever cultural value or people they are oriented to without in anyway conforming to what outsiders might think of as manifestations of social commitment.

NOTES

1. See I.J. Brugmans, *Geschiedenis van het Onderwijs in Nederlandsch-Indie,* Groningen, Batavia: J.B. Wolters, 1938, pp. 285-287. See also C.D. de Langen, "Medical training in the Indies", *Bulletin van het Koloniaal Instituut,* I, No. 2 (February 1938), pp. 125-134.

2. See I.J. Brugmans, *op. cit.,* pp. 347-348.

3. See, for example, the courses listed in Rukmono & Nasar, eds., *Buku Tahunan Fakultas Kedokteran Universitas Indonesia 1972,* Jakarta: Fakultas Kedokteran Universitas Indonesia, 1972.

4. See *Rechtshoogeschool.* Gedenkboek, uitgegeven ter gelegenheid van het vijf en twintig jaar bestaan van het rechtswetenschappelijk hoger onderwijs in Indonesie op 28 October 1949, Groningen: J.B. Wolters, 1949. See also Harsja W. Bachtiar, "Indonesia", *Reports and Papers in the Social Sciences, No. 33. Social Sciences in Asia II,* Paris: Unesco, 1976, especially pp. 23-29.

5. See I.J. Brugmans, "Rapport inzake de Faculteit der Letteren", *Djawa,* XX (1940), pp. 355-439.

6. See *Kabinet Pembangunan II Republik Indonesia,* Jakarta: P.T. Pentja, 1973, pp. 38-48.

7. See *Universitas Gadjah Mada, Buku Petundjuk Tahun Akademi 1973,* Yogyakarta: Gadjah Mada University Press, 1972.

8. For a discussion on the problem of ethnic heterogeneity, see Harsja W. Bachtiar, *The Indonesian Nation: Problems of Integration and Disintegration,* Singapore: Institute of Southeast Asian Studies, 1974.

9. See, for example, Harsja W. Bachtiar, "Value conflicts and educational planning", *Berita Antropologi,* No. 10 (November 1972), pp. 1-36.

10. For a report on the program, see *Pendidikan di Indonesia 1900-1974,* Jakarta: Badan Penelitian dan Pengembangan Pendidikan dan Kebudayaan, Departement Pendidikan dan Kebudayaan, 1976, p. 117.

11. See, for example, Harsja W. Bachtiar, "Indonesia", in Donald K. Emmerson, ed., *Students and Politics in Developing Countries,* New York: Frederick A. Praeger, 1968, pp. 180-214.

SOCIO-ECONOMIC NEEDS AND PROBLEMS: CHALLENGE TO HIGHER EDUCATION IN THAILAND

Wichit Srisa-an, Ph.D.*

Introduction

The ultimate objective of national development is to achieve the social and economic progress that would render the population of that country a higher standard of living in the forms of social security and economic welfare. Thailand, one of the developing countries in this region, has carried out no less than three 5-year economic and social development plans with the Fourth Plan in its first year of implementation. As with any sound development planning, the economic and social needs of the society were the main bases for formulating development programme in the previous plans.

Ever since the formulation of the first economic and social development plan in the last decade, education was solidly recognized as one of the most important factors contributing towards the fulfillment of the nation's development goals. National education development plan has always been an integral part of Thailand's national economic and social development plan.

The institutions of higher education in Thailand especially the universities have as their main responsibilities in regard to national development the four following functions:

1. Production of university graduates
2. Research activities
3. Public services
4. Cultural preservation and promotion

In the past, the role of graduate production by the institutions of higher education in Thailand was emphasized in serving the country's need for high-level manpower requirements. The implementation of the other three functions were not, therefore, carried out to a fuller extent. However, in the 4th Plan which commenced last year, four main functions, production of graduates, research, public services and the cultural preservation and promotion were stressed so that the institutions of higher education would be able to play their role more actively in regard to the overall national development.

The Classical Role

The classical role of the institutions of higher learning as recognized since the inception of the first university in Thailand more than 60 years ago, was to train the personnel to serve the society particularly the government sector. This classical role may be regarded as a direct service to the society as opposed to research activities which was carried out on a limited scale. In contrast, research was then considered an academic excercise and a part of the teaching function with the advancement of knowledge as the ultimate objective. It was much later that research activities were generally recognized as related and relevant to national development. Thus, the institution's readiness and capabilities in regard to research activities are un-

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derstandably limited. While provision of public services were mostly in the instruction-oriented form including short course training, dissemination of knowledge through various mass media, health services made available by the teaching hospitals, and agricultural promotion in the forms of extension work. The institutions of higher education performed these functions as academic-related and campus-based services.

The Public Service Role

Since the inception of the First National Economic and Social Development Plan in 1961, the roles of the institutions of higher education in Thailand have become more development-oriented. These institutions made great efforts to meet the rising demands for social progress by integrating social service activities into an essential part of all the major functions.

The off-campus, action-oriented projects formulated during this period assumed three common characteristics:

- concentrating on rural development in the areas which contain a large majority of the population
- responding to economic and social needs of the local communities
- utilization of multi-disciplinary approach in solving local problems and rendering services

Projects with the above-mentioned characteristics have been implemented by a number of universities, some of the more innovative projects categorized according to the basic functions are cited below:

A. Instruction-Related Projects

1. *Graduate Volunteer Programme — Thammasat University*
   The conception of the graduate volunteer programme stemmed from the realization that graduate studies were only in the lecture rooms, laboratories and libraries on the one hand while the rural community has been lacking high-level manpower especially teachers in the local school on the other. Deriving from this initial thinking the graduate volunteer programme was formulated with the following objectives:

   a. to train the graduates to work for the public benefits
   b. to give the graduates the opportunity to be involved in field work in rural areas and to promote their interest therein, and
   c. to encourage them to use their initiatives and their human-relation skills that will be beneficial to the community in which they live.

   The programme was initiated and organized in 1969. In the following year, the National Education Commission officially recognized the GVP's curriculum which was also recognized by the Civil Service Commission as a "Professional Certificate" course.

   The recruited graduates were trained, both academically and practically, for approximately three months. After completing the training courses, they are sent out to live upcountry where they perform their jobs individually.*

* Graduate recruits are not limited to any particular discipline. The recruits are assigned according to their backgrounds.

Since the setting up of the project up to 1976, 244 graduates were trained as volunteers (shown in Table 1). From Table 2 it can be observed that most of the volunteers were from the social sciences while the remainders were from the natural science departments. Type of activities undertaken by graduate volunteers include teaching in secondary school, primary school, hill-tribe school and villages, health activities and social welfare. Another interesting point is that the number of female volunteers substantially exceed the number of their male counterparts (58.20 percent to 41.80 percent).

During the 4th Plan (1977-1981) period, it is expected that the number of volunteers will increase from 130 in the first year to 250 in the last year of the implementation.

Table 1

Numbers and Percentages of Graduate Volunteers Working in Various Regions of Thailand from 1969 - 1976

Year	Lot	No. of Graduate Volunteers	Region			
			North	Northeast	Central	South
1969	1	18	7	4	3	4
1970	2	19	9	3	4	3
1971	3	25	10	7	-	8
1972	4	29	11	10	2	6
1973[1]	5	41	16	11	7	7
1974[2]	6	40	19	12	7	2
1975[3]	7	42	16	14	8	4
1976[4]	8	30	12	13	3	2
Total		244	100	74	34	36
Percentages		100.00	40.98	30.33	13.93	14.76

Remarks:
[1]Two graduate volunteers lot 4, in 1973, worked for the second year.
[2]One GV of lot 5, in 1974, worked for the second year.
[3]Five GV of lot 6, in 1975, worked for the second year.
[4]Three GV of lot 7, in 1976, worked for the second year, and one GV of lot 6 worked for the third year.

Sources:
1. *Graduate Volunteer Programme (GVP)*, Registration Book of Graduate of Volunteers.
2. *Graduate Volunteers of Thammasat Univerity*, Bangkok: Thammasat University Press, B.E. 2517.
3. *Graduate Volunteer Bulletin*, Bangkok: Thammasat University Press, September 1975.
(1 and 2 in Thai)

Table 2

Numbers and Percentages of Graduate Volunteers Classified by Type of work (or Line of Activity) Sex, and Degree

Year	Sex	Type of work or line of activity					Total	Bachelor Degree in	
		Secondary Schools	Health Activities	Primary Schools	Hilltribe Schools & Villages	Social Welfare		Sciences	Social Sciences*
1969	Male	4	—	—	—	—	4	—	4
	Female	14	—	—	—	—	14	—	15
1970	M	4	—	—	—	—	4	1	3
	F	15	—	—	—	—	15	1	14
1971	M	15	—	—	—	—	15	1	14
	F	10	—	—	—	—	10	2	13
1972	M	11	4	—	—	—	15	—	15
	F	11	3	—	—	—	14	—	14
1973	M	8	1	8	3	—	20	5	15
	F	10	3	3	5	—	21	1	20
1974	M	6	4	6	2	—	18	2	16
	F	6	5	7	4	—	22	3	19
1975	M	3	4	4	4	—	15	2	13
	F	4	7	8	8	—	27	2	25
1976	M	2	2	2	4	2	12	—	12
	F	2	4	7	5	—	18	2	16
Total		125	37	45	35	2	244	23	221
Percentages		51.23	15.16	18.45	14.34	0.82	100.00	9.43	90.57

*Remarks: Social Sciences include graduates in Education

Sources: Same as TABLE 1

Table 3

Numbers of Graduate Volunteers Estimated to be Recruited in the Planned Period (1977-1981)

Name of Project	Number of Graduate Volunteers										Total
	1977		1978		1979		1980		1981		
	1st lot	2nd lot	1st lot	2nd lot	1st lot	2nd lot	1st lot	2nd lot	1st lot	2nd lot	
[1]Graduate Volunteer Project	60	60	70	70	80	80	90	90	100	100	800
[2]Supporting GV to further their Second and Third Year Work Project	5	5	10	10	25	25	20	20	25	25	150

Source: *Thammasat University Development Projects During the Fourth Development Plan B.E. 2520-2524,* Volume 3, p. 10 (Mimeographed in Thai).

Remarks: GVC has been supporting second-year volunteers since 1973, by which the contributions are provided from Canadian University Service Overseas (CUSO), and the Ford Foundation. In 1976, CUSO provided Baht 40,000 — for GVC in supporting 2nd-year GV work and activity concerning rural development. It is called "Revolving Loan Fund". The criteria and conditions for the Fund request & approval must be considered by the Administrative Committee.

2. *Phuket Community College — Prince of Songkla University*

Attempts were made among the institutions of higher education in Thailand to explore the possibility of providing more flexible education programmes to meet the needs of local communities.

Prince of Songkla University volunteered to experiment on the community college concept as a pilot project.

As a part of Prince of Songkla University, the college offered short cycle education to high school graduates and equivalents who had completed high school courses in designated areas covering five southern provinces: Phuket, Ranong, Trang, Phang-nga and Krabi provinces.

The formal training programme will emphasize local manpower needs by concentrating on the occupational areas, with emphasis on self-employed jobs, in demand by the community. In this respect, the first programme offered was tourism and hotel business.

The target plan is as follows:

Course	Number of Students				
	AY 1977	AY 1978	AY 1979	AY 1980	AY 1981
A. Regular Course (2-yr. programme)					
1. New entrants	50	420	600	600	600
2. Total number of students	50	470	962	1,120	1,120
3. Graduates	—	45	400	540	540
B. Special Course (continuing programmes: academic/vocational education)	unlimited (at least about 1,000 students a year is anticipated)				

Academic courses and training as community services in the form of adult education will later be offered in the following fields: agriculture, business administration, applied sciences, natural sciences, liberal arts, home economics and education extension and vocational development.

3. *Medical Education for Students in Rural Area Programme*

To solve the problem of shortage of doctors in the rural areas and to train medical students for working in the local communities, a project to promote medical education for students from the provinces was initiated by Mahidol University in 1975 whereby approximately ten M.S. 5 (high school) graduates with appropriate scholastic standing and good behavior were selected from designated central provinces to study in the medical schools. During the training period, each student receives a financial support of approximately 6,000 baht (US$ 300) per year. Upon graduation, they are required to go back and work in their hometown in accordance with the contract earlier concluded with the government.

Chulalongkorn University operates a similar programme for eight provinces in the eastern region of Thailand — Chachoengsao, Cholburi, Chandhaburi, Trad, Rayong, Nakorn Nayok, Samut Prakarn and Prajeenburi. These medical students will be trained in the last two years at the local facilities, i.e. in their provincial hospitals and medical centers while Mahidol's students undertake their internship training at Mahidol's hospitals in Bangkok.

It is believed that by implementing such project, this new "generation" of doctors will nurture a new attitude towards working in the rural areas and at the same time provide the much-needed medical services to the people in the rural areas.

The first group of graduates from Mahidol University are expected in 1981 and Chulalongkorn's in 1983.

B. Research and Services

1. *Mae Klong Integrated Rural Development Project*

The Mae Klong Integrated Rural Development Project is regarded as the first project in Thailand bringing together the expertise of three universities — Kasetsart, Mahidol and Thammasat with the financial assistance of the Rockefeller Foundation — in a pilot project to improve rural conditions by emphasizing the means of introducing new technology and multi-disciplinary approaches leading to a better way of living.

The project was conceived when Kasetsart, an agricultural university, created in 1943 by the Ministry of Agriculture, sought to improve land — and water-use technology in the rural area surrounding its new campus and experiment station near Bangkok. Because the rural problems were complex and interrelated, it invited two other universities — Thammasat, oriented to the social sciences, and Mahidol, which emphasizes medical sciences — to join with it in finding solutions to the problems.

The project area, Mae Klong and Tha Jeen Rivers basins includes approximately 1,440,000 hectares of seven central provinces with the population of more than 2.5 million.

In 1974, the project set out to gain as much knowledge as possible about the area and to outline an interdisciplinary and interuniversity approach to improving the production, income, health, education, and other aspects of life in the area. Teams of four people each — a university teacher-researcher and students in agriculture, medicine, and/or social sciences — were sent to six different parts of the region to enlist the support of local people while living among them, to determine the needs of the locality, and to collect firsthand information about village life.

The investigations of these faculty-student teams confirmed the original conviction that the area would be a good place to test development methodology and to improve rural conditions.

Eventually, each research leader will prepare a list of problems in one zone of the Mae Klong area and will rank the problems in order of difficulty and possibility of solution. An executive committee will screen these analyses and will outline an interdisciplinary programme for action in each zone. Research leaders and specialists will discuss and modify these work plans, and pilot projects will then be established.

After a general survey of basic data was carried out in 1974, six pilot zones have been selected to study and conduct test development. During the two-year work, a number of activities were implemented including the followings:

— promotion of fish raising in place of fertile rice cultivation.
— four village health posts were established and village health volunteers have been trained to handle first-aid problems and advise villagers on sanitation, nutrition, common health problems and drinking water, etc.

- provide data and academic recommendations for operating government agencies.
- vocational group training for local needs: motor repairing, dressmaking, fermented fertilizer making, etc.

The Mae Klong Project seeks to test several development "packages" for impact and for evidence that programmes that benefit one group of villages can provide similar benefits elsewhere. Project planners hope learning experiences will be introduced into classroom teaching and that the combination of better teaching and fieldwork will give students a better understanding of rural development.

Certain excerpts were taken from "Mae Klong Integrated Rural Development Project", *Higher Education and Social Change*, by Kenneth W. Thompson and Barbara R. Fogel, 1976.

2. *Nam Pong Environmental Management Research Project*

Being part of a plan for an ecological study of the Nam Pong basin in the northeast of Thailand, the project is sponsored by the National Mekong Committee of Thailand with financial assistance from the Ford Foundation. With blessings of the Thai government, a number of research workers from four universities in Thailand are conducting various research studies pertaining to the optimization of natural resources development as pointed out in the preface of the project plan prepared by the Committee for Co-ordination of Investigations of the Lower Mekong Basin Secretariat ". . . . . an ecological study of a human environment in a state of transition from a largely traditionally based pattern of development to one that is based mainly on technology. A change from the traditional to the technological approach to development would normally result in unprecedented positive impacts followed by unexpected negative impacts on the system. In such transitional periods the environment is, by definition, changing rapidly. The research, here proposed, is aimed at obtaining information on the Nam Pong system in its current transitional state, and identifying various imbalances, dysfunctions, and inadequacies in development approaches. Based on this information, it is expected that improved approaches to management of the basin could be devised".

The construction of the Nam Pong Project — the Ubolratana dam and power station — near Khon Kaen, in the northeast of Thailand — was completed and went in operation since 1966. Since 1965, the Nam Pong basin has undergone dramatic changes in the qualities of natural resources, the productivity of resource use and the welfare of the population. The project has impacts both negative and positive on power supply, fisheries, agriculture, flood patterns, transportation, the growth of urban and other settlements, changes in income levels, health and other environmental and social conditions. Other indirectly accountable changes, e.g. population growth and movement, new technolcgies and the general intensification of resource use, have also had effects on the programme itself. Furthermore, activities and conditions in areas contiguous to the basin have affected those in basin and *vice versa*.The character of these effects is determining the quality of life in the basin, the success in resource development programmes and prospects for the future.

With a view to taking stock of the changes that have occurred and are still occurring in the Nam Pong basin, and to assess the overall performance of the development programme, the time is now considered appropriate to launch investigations to improve an understanding of the changes, their causes and

effects. This understanding would provide the information necessary to develop means for guiding these changes toward maximum advantage in the Nam Pong basin and could be of value for other river basins as well. Therefore, the specific objectives of the Nam Pong ecological study would be:

a. to define the changes related to water resources development that have occurred and are occurring in the Nam Pong basin system,
b. to develop knowledge about the causative factors and the effects of these changes,
c. to improve means for managing the system so as to direct the chances toward desired ends, and
d. to evaluate the significance of the results in formulating planning and management procedures relative to development projects in the Mekong basin.

Among research tasks being performed by Khonkaen and several other university research workers are:

— plankton production in the reservoir and distribution system (Prince of Songkla University)
— land use (Kasetsart University)
— socio-economic studies (Khon Kaen University)
— human health and nutrition, blood and blood diseases, parasites and disease vectors (Mahidol University)
— pests and parasites (Khon Kaen University)

3. *Highland Agricultural Development — Kasetsart and Chiang Mai University*

The objective of the project is to conduct study and research in regard to the development of economic, social and health conditions of the hill-tribes in the north in order to persuade members of various tribes to give up opium growing and shifting cultivation so that they would become more useful not only to themselves but to the society as a whole.

Initiated more than a decade ago by His Majesty the King, the project was implemented by Kasetsart and Chiang Mai University with cooperation from other government agencies in the following manners:

a. Setting up of agricultural research and development stations in the highlands.
b. Development of pasture in the highland to make use of the once fertile (alang/cogon infested) land in animal husbandry and dairy farming.
c. Cultivation of substitution crops (e.g. tea, flowers, orchards) in the formerly opium growing area as a part of the government policy to combat the drug addict problems.
d. Watershed area development as a supporting activity toward soil and water conservation and ecological studies.

C. Community Services

1. *Health Care Delivery Services*

Health care delivery services are carried out by institutions of higher education offering medical sciences courses which include medicine, dentistry, medical technology, nursing, public health, tropical medicine and pharmaceutical science. Services by these institutions are both in the forms of hospitals and specialized clinics.

The demand for these services is overwhelming. From sources under the Office of University Affairs (OUA) jurisdiction, the figures show that the period during January-November 1977, over 2 million treatments have been carried out by the existing five government university teaching hospitals.

Institutions	In-patients	Out-patients	No. of treatments
1. Chulalongkorn University	31,427	488,990	520,417
2. Khon Kaen University	728	22,212	22,940
3. Chiang Mai University	244,363	187,954	432,317
4. Mahidol University*	28,900	994,081	1,022,981
5. Prince of Songkla University	The university hospital is now under construction. University services are given with the cooperation of Songkhla Provincial Hospital		
Total	365,418	1,693,237	2,058,655

On the financial side, during FYs 1977 and 1978, the government expenditures and allocations for health services were 217,23 million baht (US$10.34 million) and 248.88 million baht (US$11.85 million) respectively. These amounts roughly equal to 11 per cent of the OUA total budget of each fiscal year mentioned.

2. *Student Voluntary Services*

In the past two decades, students of the institutions of higher education have become more active in participating in social development especially in the upgrading of the living standard of the population in the rural areas. The voluntary work has been organized in many forms: the most popular and regarded as an institutionalized activity was the voluntary work camps conducted by the students during their summer vacation. The students from various fields of study set up camps in the rural communities in order to work hand in hand with the people on the projects according to the local needs. Each work camp usually lasts from two to three weeks. The majority of the work projects involved road building, well digging, bridge, school and playground construction and health and agricultural extension work. Such activities not only fulfill the needs of the communities but also are a part of a "self-development" education for the students.

Problems and Prospects

Efforts by the institutions of higher education in Thailand to answer the needs of the society in the form of social commitment-oriented activities are still in the infancy stage and thus it would not be feasible to assess the degree of success at this time. However it has been noted that campus-based services through existing facilities such as health care provided by the university teaching hospitals have not confronted with serious problems. On the contrary, the off-campus social services carried out by university staff and students having direct contact with various communities, more often than not, have faced with both internal and external problems. The internal problems within the university itself have to do with thorough understanding and readiness of the teaching staff as well as the students involved regard-

* Mahidol University has two hospitals: Siriraj and Ramathibodi

ing social commitment. The public service function of the institutions of higher education has been a much talked-about topic for some time. However the majority of the academic staffs of the institutions of higher education is still reluctant to take on the tasks for which they have neither been selected nor prepared.

The main external problems include the understanding and working relations between universities and other government agencies. In providing public services to the community, such as the Mae Klong project cited earlier in this report, efforts by the universities were generally regarded by the local authorities and other government agencies conducting development work in the area as duplication and going beyond their own "boundaries". They expressed all sorts of suspicions and at times conflicts occurred.

Therefore, it is imperative to recognize the need to promote proper understanding and define appropriate roles to the Universities and government agencies if co-operative efforts and coordination between these bodies were to be achieved.

It is invariably inevitable that institutions of higher education in developing countries cannot turn away from rendering services to the society. In fact, increasing responsibilities by the institutions of higher education is anticipated for the future. However, the success lies largely on the creation of positive partnership between universities and other government agencies. The fact that most of these institutions are government organizations, it should not, therefore be out of question to foster such partnership as well as to eliminate any existing suspicions among the organizations concerned. This is in itself a challenge to higher education in Thailand in the years to come.

DISCUSSION

The discussants of the country papers entitled "Socio-economic Needs and Problems: Challenge to Higher Education" were Dr. Harsja W. Bachtiar, Encik Zulkifli bin Mohd. Ali, Mr. S.T. Peter Lim, Dr. Wichit Srisa-an, Prof. Dr. Winarno Surakhmad, Dr. Nayan bin Ariffin, Prof. Wong Poi Kwong and Prof. Kasarn Chartikavanij.

The essence of the discussion is summarized below:

The two sessions began with Dr. Amara Raksasataya's paper which attempted to outline on a general basis the relevant parameters of social commitment through higher education.

An immediate reaction to his paper was that dispite its usefulness, practical problems would be confronted when applying some of the suggestions contained in the paper. In specific reference to part VII of the paper (Proposals to Policy Adoption), a few participants mentioned the fact that it would be extremely difficult to effect liberalization along the lines suggested in the paper. Another related view was that the suggestions were 'localized' and not generally applicable to other social and political situations. In any case, it was felt that there would be problems when the criteria for liberalization were being set-up.

Another view was that the thrust of the paper gave prominence to the university and its staff in social commitment without mentioning the role of students. Along a similar vein of thought was the comment that in matters pertaining to research there was a need to effect a balance between pure research or research to satisfy one's own interests and inclinations and applied research, that is, research oriented to solving immediate problems as a form of social commitment. Furthermore research should be in two forms, viz., research that sought to understand or identify a problem and research that led to the formulation of social policies. Having obtained the data from research, there was the need to consider how such data could be presented to the government for purposes of formulating policies. It was suggested that close co-operation between government officials and university staff would help in this respect. There was also a suggestion that perhaps the use of the word "indoctrination" in the paper was inappropriately understood within the context of the concept of social commitment and higher education.

In reply, Dr. Amara clarified that the proposals for policy adoption as suggested by him were not to be applied indiscriminately nor totally. The strategy proposed was programme defined not individual nor university. He was of the opinion that the proposals had regional relevance and were broadly applicable.

The meeting then got down to discussing the four country papers presented.

The problems that came into focus were:

1. Whether it was possible to set up objective criteria in order to ascertain that there was a problem and to determine its priority in the community concerned? For example in what way was a problem and a challenge to the university thus necessitating a social commitment to its resolution?
2. Whether, in view of the fact that teaching, research, and public service were clusters of inter-related concerns, it was possible to set-up criteria to determine their relatedness in terms of importance? Clarification of this could lead to a better understanding of what social commitment meant and implied.

3. Whether cooperation between the government and its agencies with the staff of the university could be enhanced further and if so in what acceptable forms?
4. Whether it was possible to determine the 'legitimate' clientle when higher education was linked to social commitment?
5. Whether in bringing research findings to the end users it was possible to do so more effectively through other means than academic journals?
6. Whether there was a need to take a look at the university again in terms of its organization and administration with a view to enhancing social commitment among staff and students? Specific mention was made to the problem of setting up criteria when selection of staff was carried out.

A view offered was that there was no need to set up criteria regarding how a problem might be identified. It was explained that there was generally no problem of recognition rather it was more a question of dilineating those areas in which the university was in the best position to help.

It was generally agreed that linkages existing between bureaucrats and academics should be maintained and expanded with a view to enhancing social commitment in a more direct way. It was stressed that the concept of "matrix" management should be encouraged whereby manpower and expertize from every relevant source was brought together in an integrated fashion (as apposed to compartmentalization of skills and disciplines) to enhance social commitment.

On the question of reorganizing the university in order to enhance social commitment, several reservations were made. First of all there was the question of the university having to perform its basic responsibilities (teaching, research and publication) adequately. Secondly, it was suggested that social commitment could not be allowed to reach such a degree that the university's limited resources became over extended, thus jeopardising both the university as an institution of higher learning as well as general academic standards. The various university directed rural projects cited in the paper on Thailand were good examples of social commitment by both staff and students in a direct and tangible way, though not necessarily possible in all countries. Finally, one participant stressed that developing a scientist with social commitment was a complex affair, involving many dimensions and stretching over many years beginning at the elementary level of education. Higher education in this respect was part of a total system, though a vital one. Thus it might be more useful and relevant to think in terms of developing a scientific community with social commitment.

PART III

MEANS AND METHODS OF ACHIEVING INTEGRATED PROGRAMMES IN HIGHER EDUCATION IN SOUTHEAST ASIA TO MEET BASIC NEEDS FOR FOOD

TOWARDS THE DEVELOPMENT OF SOCIAL COMMITMENT-ORIENTED STUDY PROGRAMMES IN HIGHER EDUCATION TO MEET BASIC NEEDS FOR FOOD

Krachang Bhanthumnavin, Ph.D.*

Introduction

While national leaders and their planning advisors of our Asian countries are pre-occupied with the strategies for such topics as economic growth, balance of international trade, accelerated industrialization, five-year development plans and so forth, an increasing proportion of the rural population in each country is slipping backwards towards malnutrition and famine, and the urban migrants are subsisting on poorer quality of foods. To the majority of the population of our countries who live in rural areas the time of plentiful food for everyone — wild games and birds from fields and forest; fishes from canals, streams and ponds; edible roots and shoots from the forests to supplement the staple food from cultivation — is just a pleasant but fast receding memory of a few decades ago. Instead our rural compatriots are finding that they, their children and grand-children are having not only less and less variety of supplementary foods from natural sources but also finding it more and more difficult to produce enough cultivated products to provide themselves with sufficient staples for home-consumption and to provide sufficient cash-income for procurements of their other basic needs in life. This does not imply that our countrymen who have fled the increasing hardship of the countryside to seek fortunes in the urban centres do fare any better. The majority of the urban masses with relatively low-income in a sluggishly expanding economy is finding their expenditure on foods soaring with the ever present inflation. Moreover, in spite of impressive health statistics and the outward display of modern medicine in our countries, a large number of the people is still suffering from imbalanced diet, malnutrition and parasitic worms; consuming adulterated and sub-standard foods and drinks; and throwing away perishable foods because of poor post-harvest handlings and lack of means (and of will) to preserve them in time of seasonal gluts.

It is the responsibility of every university to share with other agencies in each country in this task of amelioration of the tragic paradox on food situation of mass population in developing countries. We must accept this responsibility without further wasting our time on making accusations of the past mistakes. Rather we should accept the responsibility with compassion for our less fortunate compatriots and with all the humbleness derived from the knowledge of our own limitations and short-comings.

II

Before presenting to you an outline of a model of social commitment-oriented study programmes concerning food, I would like to draw your attention to the basic problem areas related to the subject.

The first basic problem area is *Economics and Development.* We must admit squarely that the efforts of our countries, during the past three decades after the

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Second World War, to change our economy from a semi-subsistence, agarian-based one to a commercialized industry-based one has led to the destruction of the traditional rural economy while producing inadequate substitute in the form of weakly developed industrial urban-based economy. The destruction of rural economy is manifested in the fragmentation and losses of land ownership; increasing indebtedness; static and low technology with low capital inputs; rapid increase in population, accompanied by rapid destruction of natural resources, the very basis of long-term agricultural production, and by gradual but persistent lowering of the standard of living. Thus by considering microcosm we strike at the root of the problem concerning food.

The second basic problem area is *Knowledge and Dissemination of Knowledge*. This problem area seems to complex and involved to be tackled in a limited time at our disposal, but we can attempt to discern certain patterns that we can handle. I would like to consider this problem area as comprising two major sub-areas, namely the *production of foods* and the *loss of foods* in the human ecosystem.

When we examine the scene of food production in our countries we shall find the stark contrasts between traditional vs. modern technology; between traditional vs. modern sources of food; and between subsistence vs. commercialized modes of production. The majority of our farmers, in spite of modern laboratories and experiment stations, are still practising age-old technology of farming of low productivity and high destruction of natural resources, eking out scarce subsistence from land ever depleting of fertility. On the other hand, our farmers are led by price-incentives and government extension services, to abandon the traditionally valuable food sources such as wild roots, traditional fruit and vegetable varieties, fermented preserved foods, in favour of the modern commercialized food sources and food products. Also our farmers have been urged away from the subsistence mode in which every family-unit is more or less self-sufficient in its basic needs into a commercialized mode in which each family unit is dependent on the economic and business machines of the country and of the world, without any guarantee as to their social and/or economic security. Is it surprising therefore to witness that as farming nations our countries are moving fast toward an agricultural cul-de-sac at the end of which the bulk of the population has exhausted all the natural resources of the land and yet not producing enough to feed the additional mouths (to the tune of some 1.1 million a year in the case of Thailand)?

Low as productivity of our agricultural system is, our rural population suffers further substantial losses of foods at various stages in the production and consumption system. The most obvious (and naturally the most mentioned) are the substantial losses which occur in the fields by the incidents of pests, diseases and other natural vagaries. These losses cannot be avoided totally but with proper husbandry can be minimized at relatively small costs to the farmers. The less obvious is the losses through improper handling of the post-harvest products both of highly perishable and less perishable commodities. In the archaic marketing systems as practised in our countries, in which the economic responsibility for losses is placed on the farmers and the consumers, while the middlemen stabilize their profits, little has been done to reduce unnecessary post-harvest losses. And who but the farmers and the consumers in towns that suffer? An even more subtle losses of foods occurs at the family level. It has been well established that cultural preferences have resulted in imbalanced diets and/or biochemical malnutrition and that inadequate knowledge and lack of hygiene combine to produce parasitic disease that saps so much of food energy from millions of the populations in our countries.

All of these manifestations have to do with the non-application or non-

awareness of *knowledge* which often exists abundantly in the universities, research institutions or even in public libraries. The knowledge remains, however, useless on the shelves. Unfortunately the majority of our technocrats are more concerned with catching up with their counterparts in industrial countries in the attempt to acquire new knowledge rather than with the dissemination of knowledge and technologies which are directly relevant to the well-being of the mass in our own countries. Thus exist the shameful anomaly that we needs experts from industrialized countries to bridge the technological gaps between the elites and the masses of our own countries.

The third basic problem area is *Institutional.* Since the end of the Second World War, our societies have undergone rapid and extensive economic, social and cultural changes which affect all facets of our mode of life. Yet our administrative institutions, including law and legal procedures, have changed very little. In many of our countries adulteration of foods, misuse of illegal food additives, low standard of food hygiene and food quality control are tolerated to an alarming extent. Unlimited toxic industrial wastes are allowed to be dumped in natural food production areas such as in-shore fishing grounds and aqua-culture areas. All these are but few of the examples of food problems arising from institutional causes.

The last basic problem area on which I would like to touch is *Public Awareness.* Owing to the obvious communication gap between government agencies and the population, both our producers and consumers of foods lack sufficient knowledge, be it technical or administrative or legal, to increase their efficiency in production, or to minimize their losses or to protect their rightful interests. It is sad to witness the people suffering unnecessary hardship and deprivation only because they are not aware of certain relevant knowledge, while our sophisticated networks of mass media are turning out cultural trashes and cheap commercialese which lure away the public even further from sensible way of spending for livelihood.

III

Having defined the major basic problem areas concerning food, I would like to invite your attention to an educational answer to the problems concerning basic needs for food in our countries. In my view, the solution is composed of two major components, namely *Technical* and *Socio-Psycho-Cultural,* of which the latter is the more important element. If we are to affect substantial improvement in food conditions in our countries we must:

a. make our national leaders and their planning advisers aware of the real human problems that exist among the masses;
b. make our educators, scientists, development workers (both present and future) realize that how misdirected they have been in preoccupying with the propagation of what they had learned from western universities in their countries at the price of neglecting the down-to-earth suffering of their own compatriots;
c. make our administrators face the reality of the existing conditions in the society and affect institutional improvement accordingly; and lastly
d. create awareness among our population of their own plights and the peaceful way of solving them.

All these involve changes of both individual and group behavioural patterns which are firmly anchored in the socio-psycho-cultural matrix of each society.

The technical aspects concerning the subjects of food are well documented.

The question remains to be the choice of technologies relevant to a particular problem or situation and the device for effective transfer of the technologies to the people or communities that need them.

IV

It should be clear from the foregoing presentation that a study programme oriented towards social commitment at the university level on the theme of *Meeting Basic Needs for Food* should have the following as its objectives:

a. Accurate understanding of the social and biological nature of agricultural systems (ranging from primitive subsistence to purely commercialized farming).
b. Accurate understanding of the ways of subsistence farmers, agarian culture and peasant and rural societies.
c. Accurate understanding of the effects of current development processes on the traditional society and of the nature of well-balanced development planning.
d. Accurate and up-to-date knowledge of general economic and social situations in the rural and depressed urban communities.
e. Accurate understanding of problems — in technology transfer in each country.
f. Accurate understanding of the processes and systems involved in the handling of food along producers-to-consumer route as exists in each country.
g. Accurate understanding of major food habits in each country.
h. Accurate understanding of problems in upgrading or maintenance of food standard both in public and at family level.
i. Favourable attitudes towards the problems and the suffering of the poorer population who constitute the masses of each country.

(I might add here that this objective is of most critical value in the whole programme).

From these objectives a central theme or *"core curriculum"* could be formulated and appropriate details could be added to suit level of training (e.g. high-school, undergraduate, postgraduate levels or even series of public lectures) and to suit academically specialized courses (e.g. for courses in agriculture, social science, political science, economics, development administration and so on). Personally, I feel that the content of such a curriculum should be put forward to as wide a public audience as possible because of the simple fact that the subject of food involves everyone in the society.

V

I would like to end this very brief treatment of such a vast and complex a subject area as a social commitment-oriented curriculum model concerning food by stating my convictions which have been derived from reasonable experiences in education and development in Thailand. These convictions can be summarized as follows:

a. The development programmes which are heavily biased towards industrial and urban sectors such as those carried out in many developing countries during the past three decades cannot go on without calamitous effects on the rural masses once the natural resources for agriculture has been depleted to critical threshold.

b. For decades to come, the basic needs for food will be a major issue in ever increasing areas of the world even in supposedly fertile countries as Thailand.
c. Peaceful solutions to food problems of nations and of the world could be solved only by the elites of each nation (and the more developed nations of the world) who have developed a fully accurate understanding and a sincere sympathetic attitudes towards the problems and those multi-million people who suffer under such problems.
d. Educational institutions at all levels (universities in particular) should be mobilized along the social commitment line towards the creation of appropriate climate for sensible actions on this crucial problem of mankind.

We have the choices in our hands. Whether we choose to commit ourselves to the cause for the masses or to remain in our "ivory towers" (which are incidentally paid for by the masses) is an action worthy of recording in history.

Annex to the Paper "Towards the Development of Social Commitment-Oriented Study Programmes in Higher Education To Meet Basic Needs For Food"

Krachang Bhanthumnavin, Ph.D.

A Course for Grade 12 and M.A. and Ph.D. Students (as actually implemented)
(Designed to create a clear understanding of and sympathetic attitudes towards rural masses)

No.	Topic	Level	Time allocated	Behavioural Objectives	Mode of Delivery
1.	The Concept of Ecosystem.	Grade 12	1 hr.	a. accurate understanding of the biological nature of agricultural system. b. understanding of social and economic nature of various type of agriculture. c. perceive a clear perspective of the varying stages of present conditions of agriculture in Thailand.	— Lectures with aids of photographic slides and pictures of real situations. — assigned readings.
		M.A. Ph.D.	½ hr.		
2.	Man and His Place in the Ecosystem	Grade 12	1 hr.		
		M.A. Ph.D.	½ hr.		
3.	Various Forms of Farming. — Hunting/gathering — Subsistence (Shifting; Semi-permanent; Permanent) — Subsistence-cum-commercialized — Commercialized	Grade 12	2 hrs.		
		M.A. Ph.D.	½ hr.		
4.	System Analysis on Agriculture (Major factors involved in agriculture; Decision making process involved; Agriculture as human endeavours).	Grade 12	1 hr.	a. accurate understanding of the dynamicism of agriculture especially in human behavioural terms. b. accurate understanding of the constraints in agricultural system.	— Lectures based on real situations illustrated by specific cases.
		M.A. Ph.D.	½ hr.		
5.	Understanding Peasant Sub-culture (Attitude, Value, Needs and Motivation of peasant farmers).	Grade 12	1 hr.	a. accurate understanding of the ways of life of subsistence farmers, agarian culture, peasant and rural societies.	— Lectures with A/V aids.
		M.A. Ph.D.	½ hr.		
6.	Characteristics of Agarian Culture.	M.A. Ph.D.	1 hr.	b. sympathetic attitudes towards farmers, especially poorer farmers.	— assigned readings.
7.	What Actually is Meant by "Agricultural Development"?	Grade 12	1 hr.	a. general understanding of processes of changes in "agricultural development".	— Lectures.
8.	Role of Agriculture in National Economic Development.	M.A. Ph.D.	½ hr.	b. understanding of the process of economic development from agarian economy to mixed economy as occurred in Thailand.	— assigned readings.
9.	Factors Required (integratedly) in a successful agricultural development.	M.A. Ph.D.	½ hr.		
10.	Historical Reviews of Economic Changes in Thailand (since 1853).	M.A. Ph.D.	1 hr.	c. clear perception of changes in Thailand and how the present situations have developed.	
11.	Social and Cultural Changes that Accompanied Economic Changes in Thailand.	M.A. Ph.D.	1 hr.		
12.	Evaluation of agricultural and rural development in Thailand.	M.A. Ph.D.	½ hr.	a. perception of real general economic and social conditions in the rural and depressed (migrants) urban communities. b. understanding problems of technology-transfer. c. identification of failures and successes in National Development Plan.	— Lectures. — assigned readings.
13.	Human Problems in Development.	M.A. Ph.D.	½ hr.		
14.	Specific Problem Areas of Agricultural and Rural Development in Thailand (e.g. Land Tenure/Land Reform; Post-harvest treatments and marketing systems of major commodities; agricultural credit).	Grade 12	4 hrs.	a. understanding systems and processes involved in the handling of food along producer — to-consumer route. b. understanding wider problems involved in agricultural development.	— Lectures. — assigned readings. — visits on sites of action.
		M.A. Ph.D.	1 hr.		
15.	Practical Works a. Grow vegetables and commercial flowers in containers. b. Raise quails for commercial egg-production. c. Live and work with rice farmers. d. Visits to farms, nurseries, central markets, etc.	Grade 12	3 months 3 months 2 weeks one-day each	a. reinforcement of what is learned in class room. b. introduction to manual labour. c. attitude of continuous responsibility essential in farming enterprises. d. learn cultivation techniques. e. sympathetic attitudes towards farmers who suffer under hardship.	Practical works along well-defined programmes of cultivation.

MEANS AND METHODS OF ACHIEVING INTEGRATED PROGRAMMES IN HIGHER EDUCATION IN MALAYSIA TO MEET BASIC NEEDS FOR FOOD

Lee Fah Onn, Ph.D.*

The first impression that one would get when looking at Malaysia is the lush greenery enveloping this country. Closer inspection reveals that the level of agriculture is rather advanced with considerable areas of cultivated land devoted largely to the production of rice and other food crops. The area under rice cultivation is about 1.32 million acres and about 300,000 farmers are involved in rice production. If the area devoted to other food crops such as sugar cane, ground nuts, vegetables, fruits, etc. are taken into consideration, the total land area devoted to food production would be in the region of 1.7 million acres.

On the other hand, over 4 million acres are planted with rubber. Oil palm plantations occupy another 1.3 million acres. Simple calculation shows that only about one-third of the cultivated land is used for the production of food crops.

It would be quite apparent from this that emphasis is given to the development of cash crops of high economic returns. Again, the distribution of development funds under the Third Malaysia Plan reflects the relative emphasis placed on these two categories of agricultural activity. Under the Third Malaysia Plan, about 1.7 billion ringgit or 9% of the total TMP Budget is allocated for agricultural activities connected with food production (including livestock and fishery development).

Although food production has more or less kept up with its population growth, Malaysia faces its greatest food deficit in sugar, cereals, milk and milk products, beef and animal feedstuff. As a result of this, many projects have been planned for and implemented by the Government to narrow the gap between local production and consumption, or to increase the percentage of self-sufficiency in these food items.

This need to be self-sufficient can be attributed to at least three factors:—

i. Difficulty in securing these food items at times of world shortage, as was evidenced by the poor harvest in many parts of the world in 1972-74 resulting from unfavourable climate, pest infestation and the high cost of fuel and chemical fertilizers;
ii. Saving of foreign exchange; and
iii. Providing employment especially in the rural areas.

One can look at the problem of food shortage from various points of view. Some of the major areas are listed below.

a. *Nutritional:* For healthy growth and development, there must be present in the daily diet sufficient amounts (depending on a number factors including age and degree of physical exertion etc.) of carbohydrates, proteins, fats, vitamins and minerals. Malnourishment occurs when there is a serious deficiency of one or more essential nutrients, most commonly proteins in a person's diet. Undernourishment refers to the insufficient calorie intake. The former is more common in Malaysia, especially among poverty groups in the East Coast States.

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b. *Distribution:* Failures of food distribution can be the result of a number of interacting factors including poverty, ignorance, cultural and economic patterns, and lack of transportation and storage facilities.

c. *Production:* Low productivity can be attributed to any one of the factors including:

   i. In the case of fisheries: overfishing, ineffective enforcement of resource management and conservation Laws: out-dated fishing gear, pollution;
   ii. Livestock: poor management of animals and pastures, low quality feedstock, diseases and animals of poor growth rate; and
   iii. Other food crops: Lack of irrigation, inclement weather, poor soil management practices, inefficient methods of cultivation, low yield planting materials, disease and poor harvesting techniques.

d. *Wastage:* Poor storage facilities, wasteful methods of processing and loss of food due to pests have been known to have serious effects on food production. It must also be realised that food supply can be improved considerably by increasing the utilization of waste and byproducts.

It is very obvious that food shortage can be a very complex issue and these factors interact with each other to produce a whole new spectrum of problems.

While the discussion on the relative success or failures of food and agricultural policies of a particular country is outside the scope of this Seminar, it is nevertheless of utmost importance to emphasize here that such policies have most probably been made and acted upon by men and women who have had the opportunity of Higher Education.

As the anxiety over the availability of food increases, so does the pressure on governments and their institutions to do something about these shortages. In Malaysia, Higher Education has been entrusted with this difficult task of training manpower at a higher level to cope with national development needs. Last I give the impression that Higher Education programmes in Malaysia are function — or job-oriented, I would like to point out that programmes for the training of the intellect have not been neglected.

Any training programme, however well-conceived, will not bear fruit if there is no national effort made to transform ideas into action, and, to quote Shakespeare, it will be ". . . full of sound and fury, signifying nothing". National efforts such as

   i. Legislation to protect the environment;
   ii. Mass education to educate the people on the importance of avoiding various forms of wastage; and
   iii. Maintaining population growth at manageable level, and increased allocation of funds towards the provision of infrastructures required by the food production system.

are of vital importance and are complementary to good educational programmes.

Because of its special relation to economic activity, environmental controls leading to strict legislation on industrial pollution which might have adverse effects on food production (such as fishery) will have powerful opponents. There are other problem areas such as classification of land-use, allocation of development funds, etc. which might rear their ugly heads in the course of developing a national food

policy. There problems cannot be taken lightly because of economic implications. In a democracy it is usual for the government to take due cognizance of the welfare of various interest-groups so that progress achieved in one area will not be made at the expense of other areas. The formulation of a development plan calls for a thorough understanding of long-term national goals and it is perhaps in this area alone that Higher Education has one of its most sacred roles to play.

Existing Professional Courses

Universities and colleges in Malaysia offer courses both at professional and subprofessional levels to prepare students for technical careers in food production. Appendix A indicates the courses available in our institutions of higher learning. Besides these courses, there are also many subjects offered which have indirect relevance to food production. Subjects such as Plant (Crop) Physiology, Genetics, and Aquatic Biology are being offered in Science Faculties and facilities are also available for post-graduate studies. This form of programme not only produces manpower for the country, it also contributes in no small way to the advancement of our current knowledge of various aspects of food production. Furthermore, there is a constant new input of ideas and methods emanating from the work of teaching and research staff of these Universities and other research bodies such as the Malaysian Agricultural Research and Development Institute, Fisheries Research Institute, etc., to make the curricula in these Courses more up to date and relevant to the local situation.

Because of the high cost of providing higher education, and especially when several centers of higher learning were established over a relatively short period of time, the Higher Education Committee of the Ministry of Education has been called upon to play the role of a coordinator. This is done to ensure that the graduate output in the various disciplines meet with the projected manpower requirements of the country. Another area of coordination of research that has just begun to receive attention is that of compilation of types of research activities by and the equipment available at various research laboratories and this is undertaken by the newly formed National Council for Scientific and Industrial Research. It is hoped that the outcome of this work will lead to more effective utilization of talents and research facilities within the country. Developing countries cannot afford the luxuries of unnecessary duplication. Furthermore, organizations such as SEARCA, SEAMEO-BIOTROP, SEAMED TROPMED established with the objectives of regional cooperation in mind provide staff training programmes in cooperation with the Universities found in participating countries. These programmes may take the form of Seminars, short courses or Graduate Studies in a variety of fields associated with food and agriculture. It is not difficult to visualise the benefits that can be derived from this form of educational symbiosis.

An Integrated Programme

Important as the technical courses in food production offered by our Universities may be in solving food shortage, it is equally important that an integrated programme be drawn up to cater for those undergraduates whose career activities after graduation will, however slight, have influence on any of the numerous aspects of food. Within this wide category of students are those who might, for example, choose careers in the Civil Service, Town Planning, Teaching Service, Commerce and Industry, law and last but not least, politics. The main objective of an Integrated Programme here is the establishment of a sense of awareness of Man's relationship with the physical environment, with emphasis on life-sustaining factors. He must be

made conscious of the Scheme of things in life and the important roles that all producers in the "food System" have played to make human life possible.

At the moment, most universities already have courses in one form or another on Ecology or environmental science. These courses do have a rather high quantitative methodology content and require students to have done a certain amount of basic Sciences in order to follow them fruitfully. As such they are not suitable for non-Science students. However, many of the principles in these Courses can be used as the basis for the formulation of a unified multi-disciplinary curriculum. This integrated approach will enable the student to look at the problems of food with facts and figures derived from the study of human biology, demography, history, economics, management, ecology and technology.

Curriculum

Several approaches to the development of a curriculum are possible. Perhaps it would be best to start off with fundamentals such as:

Part I:

a) The nutritional requirements of man for healthy growth and development and the importance of a balanced diet;
b) The position of Man in the Food Chain; and
c) A brief history of agriculture with emphasis on the role of agricultural and other technological advances in sustaining the increase in human populations.

Simple statistical data should be introduced here to demonstrate the volume of food production over different periods up to present day in relation to population growth. To highlight the seriousness of the disproportionate increase in population over food production, estimates or other survey data on the number of undernourished and malnourished people ought to be included. This should be followed by the projections of population growth in the years ahead and the expected shortfall of food production. It should be emphasized here that solving the food self-sufficiency problem should also involve population planning.

Part II:

This section will deal with the production of major food items as well as the main factors, natural or man-made contributing to a reduction in harvest. Comparative study of production figures from countries or regions with output, indicating high productivity, might possibly have great social value if the reasons for such high productivity are revealed.

It may sound too obvious to the students that an improvement of this or an increase of that would result in higher productivity but it cannot be over-emphasised that at the bottom of all these technological application is the all-important Control Centre, i.e. Management. There should be Case studies of good and bad management in food production.

Part III:

This last section deals with the disturbances which man has created in the ecosystem such as air and water pollution, the unrestrained exploitation of natural resources, all in the name of progress.

There ought to be ample opportunities to re-examine human relationships and values, the concept of tolerance and adapatability of Man and his limits to adaptation. The main objective of this section is to encourage the student to ask questions that may be productive in understanding the intimate relationship between Man and his Environment.

A great deal of research is necessary in order to compile sufficient data and examples for this course. The Committee on Higher Education of the Ministry of Education, Malaysia, could appoint a task force to prepare the necessary teaching materials. Many international organizations such as the FAO or UNICEF could be approached for assistance in the development and production of teaching aids which ought to be widely used to increase the effectiveness of this programme. Because the majority of the students would not be science majors, it is important that technical and scientific jargon be kept to a minimum and scientific principles be imaginatively presented.

This course should be run on a trial basis for a few years and be made compulsory once the authorities are satisifed that they can cope with big number of students. Whether this course should be classified as a graduating pre-requisite or not is a moot question and one which is perhaps best handled by the authorities concerned.

Conclusion

If not for anything functional, it is hoped that this proposed programme would in one way or another enhance Man's aesthetic appreciation of nature. Perhaps he would become more committed to Society through a new communication link, a system of feedback, which can warn him that in the final analysis it is Man's lifestyles and attitudes and his relationship with nature that will simultaneously determine human existence and comfort on this planet. As it has often been said, advances in Science and Technology made in the twentieth Century have not been matched with social advancement and that our wisdom still lags behind our knowledge. We must not lose by default in our battle against human ignorance and mismanagement because if that happens, we will be putting Mankind onto the list of Endangered Species.

APPENDIX

LIST OF COURSES RELATED TO FOOD PRODUCTION AVAILABLE IN INSTITUTIONS OF HIGHER EDUCATION IN MALAYSIA

Courses \ Level	Diploma	Degree	Remarks
General Agriculture	ITM, UPM	UPM	UM, USM and UKM offer agriculture-related subjects in their Science Faculties.
Animal Health & Production/ Veterinary Medicine	ITM, UPM	UPM	
Fisheries/Aquatic Biology	ITM, UPM		UM and USM offer many subjects in these fields especially in the Final Year.
Food Technology	ITM, KP	UPM, USM	
Home Economics (Food Preparation)	ITM* UPM**	UPM	*Diploma in Institutional Catering Management. **Diploma in Home Technology.
Microbiology	ITM		This subject is taught in UM, USM, UKM and UPM.
Agricultural Engineering		UPM	
Agribusiness/ Agricultural Economics		UM, UPM	

KEY: ITM — Mara Institute of Technology
KP — Kuantan Polytechnic
UKM — Universiti Kebangsaan Malaysia
UM — University of Malaya
UPM — Universiti Pertanian Malaysia
USM — Universiti Sains Malaysia

THE MEANS AND METHODS OF ACHIEVING INTEGRATED PROGRAMMES IN HIGHER EDUCATION IN MALAYSIA TO MEET BASIC NEEDS FOR FOOD WITH SPECIAL REFERENCE TO THE SCHOOL OF BIOLOGICAL SCIENCES, UNIVERSITY OF SCIENCE MALAYSIA

Zulkifli b. Mohd. Ali*

Introduction

Food is one of several basic needs of mankind. It is the most essential basic need and must be acquired before man can proceed to satisfy other basic requirements. Looking back, we can see that Man's progress from ancient civilisation to the present revolves, in part, around the necessity to improve the techniques of gathering food. The improvisation of farm equipment to till the land and harvest food with greater efficiency was amongst the earliest technological innovations in the history of mankind. In a developing country, the complete take-off of any development plan will occur only after its population is well-fed. A healthy and well-nourished population is a main ingredient for a successful economic development. Malaysia realised the priority of this criterion early in its development, and one of the first goals after achieving independence was to be self-sufficient in food. This goal was pursued concurrently with the government policy to increase the standard of living of the rural population. It was realised that modernisation of the agricultural practices, through the implementation of the rural development programme, would catalyse the necessary increase in production and thus increase the income of the farmers. However, the rapid growth of the country's population, which is approximately 3 percent per annum and reputed to be one of the highest in the world, has increased the total food consumption. The increase in food production cannot compensate for the enlarged consumption as well as bridge the gap to self-sufficiency in food and, as a result, Malaysia is still dependent on imported food commodities. This has led to the recent implementation of the Green Book Plan as a general government policy aimed at growing more food. This plan emphasizes joint responsibility in the production of food between farmers and the general population, rather than it being the responsibility of the farmers alone.

A seminar was also held upon the theme "Malaysian Food Self-Sufficiency", jointly organised by the University of Malaya Agricultural Alumni (UMAGA) and the Faculty of Agriculture, University of Malaya in 1975. Several papers were presented on the prospect of Malaysia being self-sufficient in food in years to come. One interesting paper entitled "Food Consumption in Malaysia — Present Levels and Future Prospects for Self-Sufficiency" by Cheam Soon Tee and Tan Bock Thiam gave several estimates on the capability of Peninsular Malaysia to achieve this goal. These are as indicated in Table 1. The figures are obtained by estimating total food consumption in the respective years as a result of population increase and changes in income. The data shows that the feasibility for Malaysia to be self-sufficient varies with different food commodities. Based on the 1972 production levels and the average annual increase in production achieved between 1960-1972 it is not an impossibility to achieve self-sufficiency in rice, poultry, pork, fish, fruit, eggs and

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probably vegetables by the year 1980. However, this is not taking into consideration the fact that the products may be exported to neighbouring countries. The data also suggests that for other food commodities such as beef, mutton, sugar, milk, fats and oil, a more concentrated effort in various sectors is necessary to yield the necessary phenomenal increase in production.

Table 1

Annual Percentage Increase in Production Required to Achieve Self-sufficiency*

	Average Annual Percentage Increase			
	1960-1972	1972-1980	1972-1990	1972-2000
Rice	6.9	5.3	5.1 (3.5)[b]	5.8 (3.6)[c]
Beef & mutton	1.8	20.4	18.3 (6.3)	20.9 (6.0)
Poultry	8.0	5.9	7.5 (6.0)	9.9 (6.1)
Pork	3.1	4.9	6.5 (5.6)	8.7 (5:8)
Fish	7.5	1.9	3.9 (4.8)	5.4 (4.8)
Eggs	7.1	5.9	7.9 (6.5)	10.8 (6.8)
Vegetables	[a]	5.4	6.5 (5.2)	8.3 (5.3)
Fruits	[a]	negative	2.0 (5.3)	3.9 (5.4)
Milk	[a]	233.1	162.1 (5.4)	162.0 (5.4)
Sugar	[a]	162.6	108.0 (4.6)	103.5 (4.7)
Fats	[a]	13.3	12.1 (5.4)	14.1 (5.5)

[a] Insufficient data.
[b] Figures in brackets in this column denotes required annual percentage increase from 1980 to 1990, if self-sufficiency is achieved in 1980.
[c] Figures in brackets under this column denotes annual percentage increase from 1990 to 2000 if self-sufficiency is achieved in 1990.
* From "Food Consumption in Malaysia — Present Levels and Future Prospects for Self-Sufficiency" by Cheam Soon Tee and Tan Bock Thiam.

Higher Education in Relation to Food Production

Food production is an integration of varied processes. In the modern society food production programmes involve various strata of the society. Each strata has a specific role to play in the overall success of the programme. It involves the farmer who is directly responsible for carrying out the task of tilling the land and harvesting the crop, the engineers who provide the infrastructures such as accessible roads, irrigation dams and canals, researchers for sustaining the yield and possibly increasing production and finally the economists and policy makers. At one extreme it has often been said that to be a successful farmer you ought to be an applied biologist, engineer and economist all rolled into one. The responsibility of institutions of higher learning in a developing country is to produce researchers, technicians and managers for both government, industrial and agricultural sectors as well as trained personnel to carry out extension works necessary for the direct transfer of technology to the farmers. In addition, institutions of higher learning

should also be able to provide the leadership in various research activities which are inclined towards food production. Being mainly subsidized by the state, insitutions of higher learning in Malaysia have to conform to the country's needs, and in executing these responsibilities unnecessary duplications are avoided among the various institutes. Therefore, in the country's food production strategy each institute is entrusted with the specific role to train the required manpower and involve itself in relevant research as well as provide the necessary expertise in terms of consultants to the government. However, in carrying out such an endeavour, each institute is autonomical in formulating its own programme. This paper will deal with the University of Science Malaysia and in particular the School of Biological Sciences, as this School will have the most direct impact on food production.

School of Biological Sciences, University of Science Malaysia

University of Science Malaysia was established in 1969. Being a newly established institution, the University has the advantage of being able to study the shortcomings of various other universities, and in addition it is not tied down to conventional and established methods of approaching a higher education programme. The advancement in scientific knowledge and the broadening of various fields especially in the natural and applied sciences have been phenomenal in the last three decades. The means and methods of tackling problems are no longer isolated to a particular field but are of a multidisciplinary nature. These are among the various reasons that the rather bold step was taken to introduce the "School System" to the University of Science Malaysia rather than the traditional system of faculties with separate departments.

The School of Biological Sciences is one of the pioneer natural science schools. The founders of the School of Biological Sciences realised the necessity for a multidisciplinary approach to biology education. Further, in a developing country like Malaysia, applied biologists rather than pure biologists are needed who can solve problems that arise upon implementation of the various development projects, especially those related to agricultural, veterinary, medical, environmental and agrobased industries. A programme therefore has to be formulated whereby the undergraduates are exposed to the fundamental principles of biological sciences together with an overview of peripheral areas that cut across several fields in biology and at the same time attain a certain degree of specialisation in the pertinent areas of applied biology. To achieve these objectives the School of Biological Sciences is encompassing the traditional departments of Botany, Zoology, Physiology, Biochemistry, Genetics and Systematics, Microbiology, Ecology and Biotechniques. In addition to these fields of study there are academic staff trained in several areas of Applied Biology, namely: Aquatic Biology, Plant Pathology, Applied Parasitology, Applied Entomology and Applied Microbiology which are identified as the areas of thrust for the school. The integration of the various aspects of biological sciences under one School has, among other things, broken the traditional barriers normally existing in the departmental system. If there is any deficiency or duplication of material in the curriculum this integration allows a rapid adjustment, achieved merely by mutual consultation between those concerned rather than going through departmental formalities.

I. The Undergraduate Programme

The two degree programmes offered by the School are B.Sc./B.Sc. (Hon) and B.Sc. (Education/B.Sc. (Hon) (Education). At the same time the School is servicing various other Schools by offering courses relevant to their needs. For example

several courses are specially tailored for those doing Food Technology in the School of Applied Sciences.

Candidates opting to do B.Sc./B.Sc. (Hon) have the choice of either majoring in Biology alone or combining Biology with another natural science subject. For a discussion related to the topic of this paper the details of the teaching programme for those doing B.Sc./B.Sc. (Hon) majoring in Biology only will be dealt with.

a. The B.Sc./B.Sc. (Hon) Majoring in Biology

At present this programme is of three year duration and acccording to the recently implemented two semester unitised system, a student has to do a minimum total of 120 units of qualify for his degree. The breakdown in these units is as follows:

	Minimum Total Number of Units to be Registered for Degree
Science I (Biology)	80
Science II (Physics/ Chemistry/Mathematics)	16
Service Mathematics/ Electives	12
Bahasa Malaysia	6
Scientific Bahasa Malaysia	2
Options	4

The 28 units of Science II and Service Mathematics will provide enough basic foundation in these other Sciences, for the students to understand their use in solving biological problems as well as explaining biological processes. The 4 units of options could be fulfilled by courses from the School of Social Sciences and Humanities. This may vary from fine arts to economics and rural sociology.

The Biology courses embraced in Science I can be categorised into the core and elective courses. The core courses are compulsory for the student and will provide them the necessary fundamentals in Biology. The electives offer a degree of choice to the students according to their individual interests. Elective courses will either cover selected areas at greater depth or cover peripheral areas in Biology, normally cutting across broad areas in biological sciences. The courses offered to students according to the various fields of study are indicated in Appendix I.

In addition to doing courses from the various fields of study, during their final year the students must concentrate on one of the five thrust areas in the School. In each thrust areas there are again a series of core and elective courses. Students are also required to submit a final year dissertation in the form of a research project related to their area of specialisation. Courses offered in the respective thrust areas are as indicated in Appendix II.

b. Service courses for other Schools

As mentioned earlier the School of Biological Sciences is servicing

various other schools in the University by offering specially tailored courses to cater to their needs. Several such courses have been designed for students in the School of Applied Sciences specialising in Food Technology.

II. The Post-Graduate Programmes

The School of Biological Sciences is offering two types of post-graduate programme:

a. By Research Work: This will lead to the award of M.Sc. or Ph.D. degrees. Candidates may fulfill the requirements by doing, on a full-time or part-time basis, research in any field of Biological Sciences and, ultimately submitting a thesis. Generally emphasis is placed on research projects which are applied and within the five thrust areas identified by the School. Those on a part-time basis are normally experienced research workers from various national research organisations such as Malaysian Agricultural Research Development Institute (MARDI), The Rubber Research Institute (RRI), the Institute of Medical Research (IMR), Fishery Research Institute (FRI) and private plantations which are well equipped to carry out the required research.

b. By Course Work: This programme will only lead to the M.Sc. degree in Applied Biology. Only the M.Sc. in Applied Entomology is available at the moment. However, it is anticipated that similar courses will be offered for the other four thrust areas in the near future.

III. Employment Trends of Graduates

Since 1972 the School of Biological Sciences has produced 98 graduates majoring in single subject biology and 11 M.Sc. graduates. These graduates normally find jobs in the government, industrial or agricultural sectors in the capacity of research officers, extension workers or administrators. Research organisations such as Malaysian Agricultural Research Development Institute (MARDI), which is the national body responsible for all research on food crops and animal production including fresh-water fisheries, and the various Fishery Research Institutes (FRI) which are responsible for all aspects of marine fisheries, have also taken in some of the graduates as research officers. Several scholarships from MARDI are offered each year to students in the school and on graduation, they are committed to serve MARDI for several years.

Research Activities

Generally the research activities of the School are problem oriented as well as interdisciplinary in nature. This wil ensure financial and moral support both from government bodies and international organisations and at the same time produce results relevant to the needs of the people. The interdisciplinary approach in solving problems ensures that various aspects of the problem are vigourously probed. Collaborative work between researchers in the School and those in national research organisations are also pursued. This way, the School's expertise can be fully harnessed to raised the living standard of the people.

The following are on-going research projects which are of relevance to national food production.

a. Floating net-cages culture system for fish rearing in Malaysian coastal waters

This system of fish rearing offers a great potential to Malaysia. Preliminary findings of this research project have indicated that the floating net-cage culture system is both economical and feasible for the fishermen to undertake. Consequently, the appropriate authorities have also adopted this system and are introducing it to the fishermen in their fish rearing programme.

b. Preliminary study of bacterial diseases of fishes in Malaysia

Knowledge of the various bacterial diseases of fishes is important, especially with the increased practice of culturing fish in the coastal areas.

c. A survey of parasite fauna of some economically important marine fishes

The findings of this project will also be useful for the fish culture programmes. Parasitic infestation of the fishes will further relate to the public health standards.

d. The reproductive physiology of fishes with special emphasis on ovarian maturation and artificial spawning

One of the shortcomings in fish culture programmes has been getting enough fries for the cages. At the moment, most of the fries are being caught in the open sea and this does not ensure regularity in supply. Developing the techniques for induces spawning in selected types of fishes would solve these problems and increase the efficiency of fish culturing system.

e. To isolate and assay fish Gonadotropin from Malaysian sources for induced spawning of carps

f. Endocrine control of reproduction of the Catfish, Clarias macrocephalus

The two former projects concentrate on the fresh water fishes of Malaysia. Irrigation dam, canals, drains and padi fields, as well as man-made ponds are potential habitats for fish cultures. This will augment the sources of protein for the local population and at the same time raise their income level.

g. Improvements on the yield and quality of padi straw mushroom, Volvariella volvarcea

From this project, a method has now been developed whereby padi straw mushroom can be produced with a small capital outlay. Growing padi straw mushroom would contribute extra income to farmers in the rice growing areas.

h. Studies on insect pests of oil palm and coconut

i. Technological fractionation of edible oils based on the Malaysian Palm Oil

The two preceding studies are of great importance to the palm oil and

coconut industries. Lately, palm oil has come to the forefront as an export income earner for Malaysia. Palm oil has also to a great extent satisfied the country's need for edible oil and fat.

j. Biological Productivity of the MUDA-PEDU Reservoir and Canal System

This is a collaborative effort between researchers in the school and the Muda Agricultural Development Authority (MADA) in one of the major rice growing areas in the country. The research projects being carried out at the moment include solving the various soil-related problems which in the past contributed to lower yields of rice than can be expected. Experiments on the use of various agricultural wastes such as padi husk ash, padi straw ash, oil palm waste, sugar filter cakes and water hyacinth, to increase the productivity of this rice growing area are also being carried out.

Another researcher is looking into the various factors and processes that affect degradation of pesticides in the area. The usage of high levels of pesticides to achieve high yields has contributed to the depletion of fish resources from the canals and padi fields. This is detrimental to the health of the people, since fish is their major source for protein.

Other projects being carried out in the area include looking at the possibility of culturing fish in the dams, canals, wells and padi fields.

k. Survey of the Coastal Resources in the East Coast of Peninsular Malaysia and the Effects of Oil Spill on the Coastal Habitats

The recent rapid development of off-shore oil wells in the East Coast of Peninsular Malaysia has raised questions on the vulnerability of the marine and coastal resources of the area in the event of an oil spillage. These resources are important because they are one of the major sources of income as well as food for the people. A team comprised of researchers from the Schools of Biology, Physics, Chemistry and Social Sciences is now undertaking an interdisciplinary probe into the matter.

l. Projects to be carried out at the recently completed Muka Head Biological Field and Marine Station

Malaysia has vast marine and coastal resources to be tapped. At the present, Malaysia's major source of protein is derived from the sea. Many other forms of food can be harnessed from the sea and yet research on the culture, production and harvesting of these food products is minimal relative to that carried out in other developing and developed countries. The establishment of this station for the purpose of research in this field is a step towards correcting this setback.

Findings of the various research activities have been presented at national and international conferences, and published in both local and international scientific journals. In addition, many of the recommendations and newly developed techniques have been accepted for use by the farmers.

Conclusion

In its strategy of providing enough food for the people the country has to

achieve self-sufficiency in its major food commodities and at the same time ensure proper dissemination of the food produced.

The attainment of self-sufficiency for most major food commodities in Malaysia is feasible provided that food production programmes are effectively carried out and the projected increase in production is achieved. This entails carrying out extensive research to upgrade the present technology and subsequently the transfer of acquired technology to the farmers so that positive results will be forthcoming. The School of Biological Sciences, University of Science Malaysia has tried to develop an integrated programme to produce applied biologists that can service the various national research organisations, government bodies and private industrial sectors. The school is also involved in problem oriented research activities and the development of new techniques relevant to food production. Findings from these research activities are useful in developing guidelines for the food production programme and new technology acquired will help the ordinary farmer to increase food production.

Finally, it is important to emphasize that producing the food is only one step towards the provision of food to the people and the achievement of self-sufficiency in food commodities. Transportation from the farm, processing, preservation and marketing of products are several other problems that have to be overcome before the products can be utilised for human consumption. This requires manpower trained in diverse fields. It is the composite contributions from the various sectors coupled with the adoption of a sound policy that will lead to the achievement of the ultimate objective of providing food to the people.

ACKNOWLEDGEMENTS

I would like to thank Y.B. Tan Sri Datuk Haji Hamdan b. Sheikh Tahir, the Vice-Chancellor, University of Science Malaysia for the encouragement and support. The assistance given by Hajar in typing this manuscript is also very much appreciated.

APPENDIX I

Botany

*	1.	B01	104/2	Viruses, Bacteria and Lower Plants
*	2.	B01	107/2	Higher Plants
	3.	B00	215/2	Plant Taxonomy
	4.	B00	221/2	Biology of Algae
	5.	B00	222/2	Bryophytes and Pteridophytes
	6.	BD0	242/2	Mycology
	7.	B00	332/2	Economic Botany

Zoology

*	1.	B01	103/2	Invertebrate Zoology
*	2.	B01	106/2	Vertebrate Zoology
	3.	B00	223/2	Fish, Amphibians and Reptiles
	4.	B00	224/2	Mammals and Birds
	5.	BD0	241/2	Biology of Insects
	6.	BD0	243/2	Protozoa and Helminths
	7.	B00	321/2	Animal Behaviour

Biochemistry

*	1.	B01	101/2	Introductory Cell Biology and Biochemistry
*	2.	B01	203/2	Principles of Biochemistry
	3.	BB0	252/2	Cell Biology
	4.	BB0	254/2	Biochemistry of Metabolism
	5.	BB0	255/2	Biochemistry of Nutrition

Physiology

*	1.	B01	108/2	Principles of Physiology
	2.	B00	211/2	Developmental Biology
	3.	BB0	261/2	Invertebrate Structure and Function
*	4.	B01	302/2	Animal Physiology
*	5.	B01	303/2	Plant Physiology
	6.	B00	311/2	Biology of Vertebrate Reproduction
	7.	B00	312/2	Environmental Zoophysiology
	8.	B00	314/2	Physiology of Plant Growth and Development

Ecology

*	1.	B01	105/2	Environmental Biology
*	2.	B01	204/2	Principles of Ecology
	3.	B00	216/2	Soil Science
	4.	BB0	258/2	Soil and Plant Nutrition
	5.	BB0	260/2	Pesticides
	6.	BB0	262/2	Environmental Pollution
	7.	B00	322/2	Biogeography
	8.	B00	331/2	Ecology of Natural Resources
	9.	B00	333/2	Population Ecology
	10.	B00	334/2	Tropical Ecology

Genetics and Systematics

*	1.	B01	102/2	Introductory Genetics and Principles of Systematics and Evolution
*	2.	B01	202/2	Genetics
	3.	B00	323/2	Evolution

Microbiology

1.	B00	212/2	Introduction to Microbiology
2.	BB0	253/2	Immunology
3.	BB0	250/2	Biology of Microorganisms
4.	BB0	257/2	Applied Microbiology
5.	BB0	259/2	General Virology

Biotechniques

1.	B00	213/2	Laboratory Culture Techniques
2.	B00	214/2	Microscopy and Histological Techniques
3.	BB0	251/2	Instrumentation and Biological Techniques
4.	B00	313/2	Histology

* There are core courses

APPENDIX II

Aquatic Biology

**	1.	BA1	351/2	Physical and Chemical Oceanography
**	2.	BA1	352/2	Plankton and Productivity
**	3.	BA1	353/2	Freshwater Biology
**	4.	BA1	354/2	Tropical Aquatic Ecosystems
**	5.	BA1	355/4	Aquatic Biology Project
	6.	BA0	356/2	Malaysian Fisheries
	7.	BA0	357/2	Fisheries Management
	8.	BA0	358/2	Aquaculture
	9.	BA0	359/2	Aquatic Pollution and Conservation

Plant Pathology

**	1.	BP1	361/2	Research Methods in Plant Pathology
**	2.	BP1	362/2	Plant Pathogens and Pests
**	3.	BP1	363/2	Plant Diseases, Disorders and Assessment of Losses
**	4.	BP1	364/2	Principles of Plant Protection
**	5.	BP1	365/4	Plant Pathology Project
	6.	BP0	366/2	Ecology of Pathogens and Epidemiology of Plant Diseases
	7.	BP0	367/2	Physiological Plant Pathology
	8.	BP0	368/2	Diseases of Crops in Malaysia
	9.	BP0	369/2	Plant Disease Resistance

Applied Microbiology+

**	1.	Microbial Genetics and Bioengineering
**	2.	Microbial Physiology and Biochemistry
**	3.	Environmental Microbiology (Ecology and Pollution)
**	4.	Research Methods in Microbiology
**	5.	Microbiology Project
	6.	Food Microbiology
	7.	Industrial Microbiology
	8.	Microbial Diseases
	9.	Immunity and Public Health

Applied Parasitology+

**	1.	Principles of Parasitology
**	2.	Veterinary Parasitology
**	3.	Medical Parasitology
**	4.	Fish parasites and Diseases
**	5.	Ecology of Parasites
**	6.	Parasitology Project

Applied Entomology

**	1.	Insect Systematic and Biology
**	2.	Insect Structure and Function
**	3.	Chemical Control
**	4.	Principles of Pest Management
	5.	Agricultural and Forest Pests
	6.	Medical, Veterinary, Domestic and Stored Product Pests
	7.	Insect Behaviour
	8.	Insecticide Toxicology
**	9.	Entomology Project

** These are core courses for those opting into that particular thrust area.

+ The course code for these thrust areas courses are yet to be given.

MEANS AND METHODS OF ACHIEVING INTEGRATED PROGRAMMES IN HIGHER EDUCATION IN INDONESIA TO MEET BASIC NEEDS FOR FOOD: THE INSTITUT PERTANIAN BOGOR AS A CASE

Andi Hakim Nasoetion*

Food production in Indonesia is traditionally an activity of the peasantry, and mainly concentrated in the most densely populated areas of Java. The nature of the operation is therefore labor intensive. Efforts to increase the per area output by increasing capital input are therefore hampered by the nature of the production system, i.e. small holdings or even landlord absenteism.

To increase food production to meet basic needs we therefore have to look for other alternatives, such as the development of new farm settlements in the other islands. Until now this has been done by relocation of peasants from Java. This process has a very slow impact on food production because the rate at which peasants are relocated is less than the rate of growth of the population. Moreover, the transmigrants were put into a new environment where they had to change their farming habits from wetland farming to upland farming. Even if enough land is available, they are not used to managing a bigger land holding for profit. An area of two hectares is usually already the upper limit of manageability.

To meet basic needs for food, manpower has to be developed who could manage and operate large scale farms producing food crops for profit. By relocating this kind of skilled manpower to new farm lands it could be expected that provided sufficient infra-structural support is available, a significant increase in food production would be the result.

Development of new farm lands in the less densely populated islands of Indonesia for food production should therefore not be delegated to relocated peasants alone. Some other form of farm operation should also coexist with the small farms. This should be done on a larger scale, operated and preferably owned by a better trained farmer. This farmer should be the product of a rigorous but practical training programme in agricultural production and farm management.

Intensive integrated surveys have to be executed to find the appropriate locations for new farm land prior to the development of new settlements. Technically oriented manpower capable of transformation of agricultural land from previously uninhabited tidal or forest areas are going to be needed, while agribusiness has to move into the newly developed settlements. Manpower trained in the transfer of new technology is thus also needed to support the growth of new farming areas.

Moreover, growth of new farming areas will create problems which have to be solved by researchers. Appropriately trained research workers are therefore also a necessity to support the development of new farming areas.

Current practice of agricultural training exists at the high school and the university level. In both cases training is not directed to the production of future

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farmers, who are capable of running a large scale farm of his own. At the high school level, graduates are usually expected to become extension workers in the rural areas or employees of agricultural estates. At the university level, concurrent with the old European concept of higher education, students are trained with the objective of becoming research workers. The *sarjana* degree is usually meant to be the equivalent of the German *doktorand* or the Ph. D. candidate in US Graduate Schools. Whether this is actually achieved is another question.

Without a restructuring of the higher education system in agriculture, gaps will exist in supporting the development of new farming areas at a rate to meet Indonesia's basic needs for food. In this paper the restructuring of the educational programmes to meet these needs will be discussed taking *Institut Pertanian Bogor* (IPB) or Bogor Agricultural University as a case.

The Pre-1971 Programme at IPB

Prior to 1971, every student enrolling at IPB has to undergo a six year *sarjana* programme, rigidly separated according to faculties, *i.e.* the Faculties of Agriculture, Veterinary Medicine, Fisheries, Animal Husbandry, Forestry, and Agricultural Mechanization and Product Technology. In the Faculty of Agriculture one could concentrate in Agronomy, Soil Science, Crop Protection, Home Economics, Agricultural Economics, Rural Sociology, and Statistics.

The programmes were directed toward producing graduates through research training, terminating in the presentation of a thesis based on experiments, surveys, or secondary data analyses. An accumulation of students in the fifth year of study became apparent and students mostly manage to graduate only after eight to ten years. Prior to 1958, during the presence of Dutch professors this did not happen. However, the drop-out ratio at the freshman level reached almost 90 percent. By reevaluating the grading system in 1958, more students managed to reach the fifth year of study. However, many of them became hampered by the requirement of presenting a thesis based on research. The irony of the situation is that only around 10 percent of the graduates are employed in research institutions.

This discrepancy between educational objectives and actual needs lead the IPB to take a hard look on its educational system in the late sixties. The result was a change that lead to the establishment of a new *sarjana* programme.

The New Sarjana Programme

In 1971 a new *sarjana* programme was established for the incoming freshmen. The characteristics of this programme are as follows:

a. A common three-semester programme for all incoming students, where basic courses like physics, chemistry, biology, mathematics, economics, sociology, languages, and civics are offered.
b. A more differentiated programme in seventeen options after the common preparatory programme, offered by IPB's six faculties. A student choosing an option has to take one third of his course load in another option in order to promote inter-disciplinary and inter-faculties approaches.
c. The aim of the programme is to produce graduates who are primarily capable of transmitting new technology to the agricultural production process and secondarily capable of performing adaptive research. To achieve these aims practical training periods of three to four months in rural areas is incorporated at the end of the third and fourth year of study.

d. A paper has to be presented by the student at the termination of his study programme. This paper has to contain an analysis of a problem the student has encountered during his practical training period utilizing all the knowledge he has accumulated from his course work.

Fifty percent of the students are projected to finish the programme within four years, twenty percent within five years, and ten percent within six years. No student is allowed to stay in the programme for more than six years, implying a projected drop-out ratio of twenty percent. As a comparison, it could be stated that a drop-out ratio of sixty to eighty percent is very common at other institutions.

Graduates of this programme found their way to agribusiness and industry (60 percent), the extension service (30 percent), and to the IPB and other graduate schools (10 percent).

Student Recruitment

In 1975 a student recruitment programme was established besides the usual way of admitting students through entrance examinations. The recruitment programme enabled IPB to invite better than average high school graduates from all over Indonesia to enrol at IPB. Inequalities in access to higher education through the presence of culture-bound entrance examinations and the variability of environmental conditions of high schools are thus overcome by this method. For the last two academic years IPB managed to recruit students from 25 out of 27 provinces, and many of them from rural high schools. In this way it is hoped that many of IPB's future graduates will have stronger commitments to rural development.

The Graduate Programme

The Graduate School was established in 1975, starting with ten fields of study. The emphasis is in research training. Within two years a student is expected to earn a *Magister Sains* (MS) degree after presenting a thesis. A student who has performed very well might be invited to change his degree objective to a doctorate. The doctorate programme is also open to MS graduates who performed well in their course work and demonstrated a keen interest in research, reflected in the quality of his MS thesis.

More than 50 percent of the total enrollment of graduate students were already employed prior to entering graduate school and are expected to return to their respective positions after graduation. The existence of this graduate school enables staff of developing universities to seek a more advanced training within the country. It also provides means to detect promising candidates for advanced graduate study abroad. These opportunities exist also for staff of research institutions and planning agencies.

The Diploma Course

IPB is in the planning stage of establishing a two-year diploma course in 1979 for high school graduates who are willing to work in the agricultural sector as change agents in rural areas. It is also hoped that after the curriculum has been tested out, many of the graduates of this programme will be able to operate large scale farms to be established in newly developed farming areas outside Java. After experience has been gained, this programme could be disseminated to other receptive universities, to be executed and modified locally.

Discussion and Suggestions

Self-reliance in food supply is one of the most important aims of agricultural development which has not been reached in Indonesia. The nature of the soil distribution is such that the most fertile areas of Indonesia coincide with the most densely populated, as in Java, Bali, and some provinces at the other islands.

In these densely populated parts of Indonesia, agricultural production has reached its potentials. National increase of food production has thus to be done by opening new lands, usually less fertile and void of infrastructure, to support agricultural production.

In opening up new farming areas one should not copy the existing subsistence farming system in Java. This system is most likely an equilibrium condition, insensitive to increases of labour and capital input, as a result of farm operation in a densely populated area with small land-holdings and low capital input.

To operate a farm efficiently, the farmer has to consider farming not as a means for subsistence, but as a means to earn profit. Subsistence farmers from Java could be difficulty relocated to a larger land-holding outside Java because he is not used to managing a holding larger than 0.25 ha. Larger holdings need to be managed by farmers trained in operating a business besides being skilled in farming. The two-year diploma course might be an answer to supply this type of manpower.

However, production of well trained farm managers alone will not solve the problem. Land has to be leased to him at a ready to till stage. He also has to have access to capital at a low interest rate to operate the farm. So if one is really serious in opening up new farm lands outside Java, a substantial amount of capital and subsidy is necessary. Then, the proper thing to do might be as follows:

a. Locate the proper areas to be opened, determine the appropriate cropping system, open up the area and plant the land partially with perennial cash crops. These preliminary operations should be done by a contractor.
b. Concurrently as many diploma students as is necessary to manage the land have to be trained. To avoid failures, the students should be recruited mainly from graduates of rural high schools. After graduation, the graduates should be hired as government employees for, say, five years to manage a unit area of farm land.
c. Concurrently also peasants have to be relocated to relatively small farm sites near large farm holdings. In this way an interaction is promoted between small scale farm operators and large scale farm managers. Smallholders have to depend partially on part-time job openings at large scale farms without being completely dependent on them. On the other hand, large scale farms could not survive without the existence of field hands supplied by small scale farms on a part-time basis.
d. During, say, five years the farm manager is evaluated critically to determine whether he is fit as a farm manager. If he passed the evaluation, he is eligible to own the farm by paying his debts to the government within 25 years, say, in easy yearly installments.

If this idea could be accepted and implemented, IPB has to take the initiative in disseminating the diploma programme to state universities with faculties of agriculture to facilitate production of "licensed" farmers at a significant rate. The development of new farming areas will automatically create job openings in agricultural extension and agribusiness. Manpower for this purpose could be

supplied by the *sarjana* programme. In some cases, sarjanas might also get interested in becoming farmers themselves. New problems will also arise that need to be solved through research efforts. Here the graduate programme will enter the highlights.

Conclusions

The subdivision of higher education programmes into three stages, *viz.*, the diploma course, the *sarjana* programme, and the *pascasarjana* or graduate programme is now the policy of the Department of Education and Culture of the Government of Indonesia. By executing this policy, the three functions of the university or the *tridarma, viz.*, teaching, research, and public service, could be integrated towards a stronger commitment to community development.

Firstly, educational wastage at the higher education level could be decreased by the offering of more than one type of programme. Secondly, the university shows its commitments also towards the solution of pertinent problems, by turning out practically oriented graduates also. The interaction with pertinent practical problems will create opportunities to perform research relevant to the needs of the community. This in turn will transform the university into a source of information and knowledge for the community, such that it will be considered an integral part of the community.

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MEANS AND METHODS OF ACHIEVING INTEGRATED PROGRAMMES IN HIGHER EDUCATION IN SINGAPORE TO MEET BASIC NEEDS FOR FOOD

Lim Chong Yah, Ph. D.*

Singapore and Rice Production

Because of her small geographical size, Singapore has to specialize in areas where she has the best comparative advantage, otherwise she is unable to support her present population of 2.31 million at their present standards of living. If she attempts to be self-sufficient in rice production, for example, this target would be still, according to my estimate, about ¼ short annually, even if every square centimetre of land in Singapore including the off-shore islets were to be planted with wet padi and on the further assumption that the every square centimetre of land in Singapore is suitable for wet padi cultivation.

Indeed, if every square centimetre of Singapore's only 602.0 square kilometres of land is under wet padi, the production of rice per year with double cropping, by the latest Peninsular Malaysian standard for the best crop year, would come to only 119,050 tonnes. On the assumption of a high price of rice of S110 cents per kilo, this would work out to only S$131 million per year. This compares most unfavourably with the actual 1976 Singapore GDP of $13,814 million (at current factor cost). In other words, Singapore's GDP, if every square centimetre of land in Singapore is available for wet padi and is under wet padi, so that she could meet the demand for the staple food of her population, would work out to only about 1 percent (0.95 percent) of her current GDP. Singapore's per capita GDP per annum would be reduced from the present $5,980 to only $57.

Obviously, given the density of the Singapore population, or what economists refer to as factor proportions, the comparative cost in Singapore lies very much against rice production, although rice is the staple food of her people. Consequently, and rightly so, not a single grain of rice (or padi to be more exact) is produced in Singapore.

Singapore's Dependence on Food Import

As for wheat, another important food source, it would be much more uneconomical, if at all it could be grown in this country. The same basic argument can be said of most other food crops, be they apples, pears, apricots, peaches, dates, salak, lichees, tea, coffee or pepper. Rightly, therefore, Singapore has, from the start, not deviated from the basic policy of buying from the world's cheapest markets what she cannot produce (such as wheat and apples) or produce economically at home (such as rice and pepper). Singapore must have opted out of padi and pepper growing quite some decades ago when the comparative disadvantages of such lines of activities moved more and more against her.

The other ASEAN partners are not as unfortunate in land and other natural resource endowment as Singapore. Indonesia, Malaysia, Philippines and Thailand are all resource-rich nations. Their comparative advantages indeed lie in the ex-

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ploitation of these natural resources, including land resources. They are also labour abundant countries. They can thus also utilize this advantage, *inter alia*, in labour intensive agriculture. In the case of Singapore, whatever primary production activities she has, and she is self-sufficient in chicken , duck, eggs, and pork, they cannot be land-extensive activities. Located within the Singaporean market is a main factor that helps to explain their survival, without any price support or other protectionist measures, such as import restrictions or subsidies, from the Government. They have to face, like almost every line of economic activity in Singapore, the full blast of open competition from not only among themselves but also in the world market for their existence. This, of course, does not mean that there is no extension service in Singapore. There is and this includes livestock disease prevention and treatment, artificial insemination in pigs, plant protection and sales of veterinary drugs, vaccines and pesticides. At current market prices, the contribution of the "agriculture and fishing" sector in 1976 came to $240.4 million, contrasting with national privated consumption expenditure on "food, beverage and tobacco" of $2,737.4 million.

Low Productivity

It makes sense for resource-rich agricultural countries to specialize in food production, but among the five ASEAN countries, only Thailand is a net food exporter. And Thailand is not just an important exporter of rice, as is well known; she is also an important exporter of maize, sugar and tapioca products and this is less well known.

However, traditional peasant agricultural activities in ASEAN countries are, generally speaking, still very low in productivity, compared with corresponding activities in the developed countries. In many of the less developed countries, about 80 percent of the working population are engaged in agricultural production, and yet the majority of people in these countries still suffer from hunger and malnutrition. Whereas, in many developed countries, they have only 5 percent of their population engaged in agricultural activities, and yet they have more than enough to eat. Indeed, they have far too much to eat, witness the growth of weight watchers and the fear of high cholesterol and obesity in these countries. The United States, it is instructive to note, has only about 4 to 5 percent of her labour force in agriculture and yet she is by far the largest food exporter in the world.

It appears that ASEAN countries have not just to produce more food, but to take into consideration their comparative advantages in different lines of food production. More important still is to raise the productivity per man in such selected activities. Corollary to this is that the institutions of higher learning in all ASEAN countries must be geared towards raising productivity, be they in the field of food production or in other activities. Productivity in food production does not depend only on the farmers alone, but also on the environment in which they operate. The environment would include social and infrastructural condition, such as the transportation system, the irrigation facility, the marketing network, the credit system, the land tenure arrangement, and the taxation system. Obviously, the techniques of production too are of great importance, particularly in the context of the current Green Revolution in, say, padi cultivation. Malaysia appears to have done particularly well in the Green Revolution of both rubber and palm oil production, and export.

Singapore and ASEAN

Since Singapore is, and will continue to be a substantial food deficit country, she thus provides a ready market for her ASEAN neighbours to sell off their food

surpluses. More than that, being an international trading centre, she can also play the role of helping her ASEAN partners to dispose of their food and other surpluses to other parts of the world. This role is by no means unimportant, if production is geared towards world demand, and it is precisely in orientating production to world demand, that ASEAN countries can reap the best benefit for their people. In view of the growing trend of protectionism, the role of providing marketing outlets becomes more meaningful, for output must be for sale, if the benefits of a highly developed exchange economy and of international specialization are not to be cut off.

Income and Food

Given the taste, consumption of food, as of other goods and services, is a function of income. The higher the level of income, the greater will be the food consumption expenditure. Conversely, the lower the income, the lesser will be the food consumption expenditure. Moreover, as income rises, there is a tendency for consumers to spend less in relative terms on the staple food of rice, but more on protein food, such as meat and fish. However, in order to ensure that there is adequate food consumption, the necessary pre-condition is to ensure that there is adequate income. With no income, which can be in cash or in kind, there will be no food. In the circumstances, in order not to starve, the consumers would have to dig into their savings, if any, or get aid. The above generalization is true of individuals as of nations.

Higher Education and Income

For a nation, the pre-requisite of ensuring adequacy of food consumption is adequacy of national income. However, the adequacy of national income is not solely or mainly determined by higher education. As development theories show, there are many other factors that determine the level and changes in the level of national income. The nature and content of higher education, however important, is but one of these determining factors.

How can higher education be geared to increase the level and the rate of growth of national income so that the basic needs for food can be automatically taken care of? Admittedly, the question is much easier asked than answered. In Singapore, the main thrust of higher education, it appears to me, is to ensure the adequacy of the complex and diverse higher level manpower supply to meet the equally complex and diverse higher level manpower needs of the country. The aim is, on the one hand, to minimize under-utilization and worst still non-utilization in the employment market of graduates, and on the other hand to ensure that no serious shortages occurred. Obviously, like rainfall, both graduate manpower surpluses (flood) and shortages (drought) are undesirable.

Regulating Graduate Output

The method used to regulate higher-level manpower output in Singapore is decided firstly at the time of first intake of students which is based entirely on individual academic merits. This selection, based on individual academic merits alone, is one of the hallmarks of the student intake policy of the five institutions of higher learning in this country. No other consideration, of wealth, of parental position or parental contribution, or of the individual's eminence in sports or his ethnic, religious, linguistic background or of sex is taken into consideration. No amount of wealth or connection can therefore get a student a place in any institution of higher learning in Singapore; only individual academic merits can. When too many students of good academic standing apply for the limited number of places, only the

best who apply are chosen. The balance would have to move to other areas less in demand.

The institutions of higher learning themselves decide how many should be the intake into each field. The decision is taken after considering not only the employment prospect in each field but also the availability of teaching staff. A survey of graduate employment prospect is taken annually by the Economic Research Centre of the University of Singapore. The staff consideration is to ensure that there is no decline in standard consequent on too large an intake. The fact that the five institutions of higher learning do not overlap very much in the provision of training facilities facilitates planning intake for each institution.

No Self-Sufficiency Policy in Higher Education

The Singapore Public Services Commission gives different types of scholarships for Singaporean students to study, besides locally, in internationally well-known institutions of higher learning overseas. This overseas training is necessary as areas of specialized undergraduate and graduate training are not always available or not always adequately available in Singapore. There is also the recognition that a certain amount of cross-fertilization in learning and in experience would be good for the country. Singapore does not pretend and it is or would like to be self-sufficient in the provision of graduate or undergraduate training facilities. Overseas training serves as an important supplement to the facilities available in Singapore. As in agriculture, no self-sufficiency policy is pursued.

Indeed, there is also no self-suffiency policy in the supply of teaching staff. It is not quite uncommon to find particulary in the universities, between one-fifth and two-fifths of the teaching staff in a department who are non-Singaporeans or non-locals, a term used to include Singaporeans and Malaysians. In the universities, it is most uncommon to find a department that is entirely manned by local staff. The overseas colleagues come from developing as well as developed countries, including Australia, New Zealand, the United Kingdom, Japan and the United States. They are paid the local pay and are employees of these institutions of higher learning.

Emphasis on Graduate Employment

Of the five institutions of higher learning in Singapore, only two, namely the two universities (the University of Singapore and Nanyang University) award degrees. The other three more specialised institutions (the Singapore Polytechnic, the Institute of Education and the Ngee Ann Technical College) only award certificates and diplomas.

It appears that in Singapore the value of a degree is as much protected as the Singapore currency with built-in mechanism to ensure no depreciation in both through oversupply or other causes. Indeed, using the academic standards of many developing or even developed countries including the United States, many of the certificates and diplomas of these four non-degree awarding bodies merit degree recognition. But in Singapore the awarding of a degree would appear somehow to raise expectations unnecessarily and might create employment and other problems consequently.

Not all degrees in the same university or between the two universities have the same market value. Fearing that many Nanyang University graduates might loose out in terms of employment opportunities in a global city like Singapore, where English is the main language of Government and of international relations, including

international trade and commerce, the University has recently changed its bilingual media of instruction (Chinese and English) to that of English only. This will also enable non-Chinese Singaporeans to have equal access to that University.

Growth and Graduate Employment

Thus far there has been, generally speaking, no graduate unemployment in Singapore. The fact that nearly all graduates are employed means that they too are able to contribute towards the size of the national income, which as stated earlier, determines the level and the quality of food consumption.

GDP and Population Growth Rates in Singapore, 1966-1976

Year	Gross Domestic Product		Population
	At Current Market Prices	At 1968 Constant Market Prices	
1966	12.7	11.1	2.3
1967	12.5	11.8	2.0
1968	15.2	13.9	1.6
1969	16.3	13.7	1.5
1970	15.6	13.7	1.7
1971	17.5	12.5	1.7
1972	19.5	13.4	1.8
1973	25.1	11.5	1.7
1974	22.9	6.3	1.4
1975	7.3	3.9	1.3
1976	9.6	6.8	1.4

One main reason for the almost non-existence of graduate unemployment can be seen from the very high rates of growth of the economy, particularly after independence in 1965 and before the oil crisis in 1974.

The fact that Singapore has deliberately and successfully cut down her population growth rate from a high of 4.4 percent in 1957 to the present 1.4 percent must have also contributed greatly to the rise in per capita income and the consequent effect on the quantity and quality of food consumption in the country. The post-oil crisis era, with the concomitant increase in protectionism, has not presented as bright a picture in terms of growth prospect.

Higher Education and Industrialization

In line with the rapid emergence of an industrial sector in Singapore, higher education in Singapore has been re-adjusted to the changing needs. But this is possible only because the school system too has been re-adjusted, for the sort of training students receive in schools directly affect the sort of career they opt for later in the institutions of higher learning. For instance, without enough students trained in mathematics and physical science, the University of Singapore in particular, in particular because that is where the Faculty of Engineering is, would not be able to have enough good candidates applying for engineering. As things are, a rather neglected subject in the colonial era, the new Faculty of Engineering in the University has developed by leaps and bounds, and at present it can boast of having by far one of the largest faculties in terms of student enrollment in all the eight undergraduate faculties in the University of Singapore. The other faculties are Arts and Social

Sciences, Medicine, Dentistry, Science, Architecture and Estate Management, Law and Accountancy and Business Administration. Note that there is no Faculty or Department of Agriculture, Forestry or Geology in Singapore, as the need for such graduates in Singapore is small in number.

The Singapore Polytechnic provides a very wide range of training in applied science and technology, including food technology, and at present, it has the largest student enrollment among the five institutions of higher learning in this country.

While on the subject of producing graduates to meet the needs of society, perhaps a quotation from the observation of Professor Hla Myint on the position in Southeast Asia may be relevant, though, to the extent that it is true, not encouraging.

> ". . . . from the point of view of promoting economic development, South-east Asian educational systems still tend to suffer from at least two basic weaknesses. Firstly, there is the seeming paradox of a shortage of capable managers, entrepreneurs and civil servants side by side with the growing army of unemployable university graduates. Secondly, there is a relative shortage of people in the middle of technical skills and the blue collar jobs side by side with a relative glut of graduates and school leavers with academic education".[1]

Higher Education and Entrepreneurship

The supply of entrepreneurs is a much more difficult problem than supplying professionals. And yet, as Joseph Schumpeter correctly points out, it is the entrepreneurs, the enterprising innovative men, that really decide the level and the direction of growth of an economy. Institutions of higher learning in Singapore aim at training professionals. If these professionals too become entrepreneurs, this is coincidental. Entrepreneurs, like politicians, are not easily trained, if at all this can be done in institutions of higher learning.

However, having had food, the problem of seeing that it is clean, wholesome and hygienic is also there, but this is a much easier problem to solve than the basic problem of creating enough wealth and of ensuring that that wealth is as widely distributed as possible. Singapore has paid attention to both growth and distribution problems and, in my view, has succeeded fairly well in both.

Food Prices and Consumers

Whether food is produced locally or imported, the prices of various food items are most important to the consumers. Their real income is directly affected by them. They also limit their ability to buy food.

In pursuing the policy of buying from the cheapest markets in the world, and in ensuring that the internal distribution system is also efficient, Singapore has been able to keep her cost of living fairly stable. As can be seen from the statistics shown below, Singapore's Consumer Price Index (CPI) in fact showed a decline of nearly two per cent last year, contrasting with the double digit rate of inflation in many countries. Thank goodness, the unprecedented increase in CPI in Singapore in 1973 and 1974 did not continue for long. That was caused by exogenous factors, mainly the global fuel crisis and food crisis.

[1]Hla Myint, *Southeast Asia's Economy: Development Policies In The 1970's*. New York: Praeger, 1972, p. 145.

Overall and Food Consumer Price Indices,
Singapore, 1964- September 1977
(November 1972 = 100)

Year	Yearly Averages		Growth Rates	
	All Items	Food Only	All Items	Food Only
1964	88.8	n.a.	—	n.a.
1965	89.1	"	0.3	"
1966	90.8	"	1.9	"
1967	93.8	"	3.3	"
1968	94.5	"	0.7	"
1969	94.2	"	−0.3	"
1970	94.6	"	0.4	"
1971	96.4	"	1.9	"
1972	98.4	"	2.1	"
1973	117.7	131.4	9.5	"
1974	144.0	165.1	22.3	25.6
1975	147.7	166.9	2.6	1.1
1976	144.9	156.8	−1.9	−6.1
January-September 1977	148.6	163.1	2.6	4.1

Note: Separate CPI figures for food prior to 1973 are not available.

Singapore and the World Economy

Obviously, the Singapore economy, very much a part of the world economy, is very sensitive to changes in world economic conditions. Her CPI is particularly sensitive to world food and fuel price changes, over which she has little or no control. Food items in Singapore constitute 49 percent of her CPI.

Singapore thus has a vested interest in the stability and prosperity of the world economy, particularly in the availability of food supply. An economy like Singapore's would have to sink and swim with the world economy, sharing its adversity and hopefully also its prosperity. If the world food prices shoot up, she would have to pay for the higher prices. Hopefully, when the world food prices come down, she would benefit from them. These hard facts are known to all thinking Singaporeans, and students in institutions of higher learning are no exceptions, and are not expected to be the exceptions, being the better educated among the population of their ages and being those who benefit most from a highly subsidized higher education system in Singapore.

Thank goodness, Singapore has allowed neither population explosion nor higher education explosion to take place without restraint, otherwise the social and economic (and probably also the political) landscape of Singapore would have been different.

Lastly, Singapore has no option in supplying her own food needs; she has to depend on imports. This, however, is not true and need not be true of the other much luckier and much better resource endowed ASEAN partner nations.

HIGHER EDUCATION IN THAILAND: INTEGRATED PROGRAMMES FOR ACHIEVING BASIC NUTRITIVE NEEDS

Rapee Sagarik*

Introduction

Before embarking on the substance of this paper, I would like to discuss the liberties taken in interpreting the title for this session.

The phrase, *"integrated programmes"*, often taken to mean interdisciplinary research, will be interpreted broadly to include integration *within* higher education:

1. among disciplines;
2. among the university's three major functions of teaching, public service (including extension) and research; and
3. among universities.

It will also include integration *between* universities and:

1. primary and secondary educational institutions;
2. government agencies; and
3. farms, households and private and cooperative business firms (including farm supply, agricultural marketing and export firms).

The phrase, *"means and methods of achieving"*, will also be broadly interpreted to include indirect as well as direct means of achieving basic nutritive needs; and not only the successful examples but programmes which have encountered problems as well.

The phrase, *"basic food needs"*, will be interpreted to mean total nutritive needs from whatever food source (to avoid limiting the discussion to the major food crops as is often done by production oriented scholars; and to recognize that, while Thailand is a major food exporter, domestic nutrition problems exist).

The phrase, *"higher education"*, also needs some interpretation in Thailand since degree granting status has recently been accorded a number of teacher training colleges and vocational and technical schools; all degree granting institutions are included here.

On specific programmes, my remarks will reflect the situation at my own institution, Kasetsart University; however, in speaking to the broader problems of integration, my remarks will reflect the situation among all degree granting institutions in Thailand.

The reasons for the rather broad interpretation of the above phrases is my belief that in order to meet its basic nutritive and export needs, Thailand must continue to develop the *"superstructure of agriculture"* (including farm supply, agricultural marketing and export firms, infrastructure, education, research, extension, the information collection, processing and dissemination system, etc.).

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Secondly, I am frankly concerned that, in our efforts to be "relevant" and to be able to demonstrate the *direct* impact which higher education has on meeting basic food needs, we may ignore the often more important *indirect* means of meeting these goals.

The objectives of this paper are, therefore, threefold:

1. to provide brief descriptive comments about the Thai economic and educational systems;
2. to discuss integration *within* higher education; and
3. integration *between* higher education and other institutions in meeting basic food needs.

Descriptive Background

The Thai economy is relatively private enterprise oriented with government expenditures less than 20 percent of Gross Domestic Product (GDP). Agriculture is the dominant sector — farm output contributes about 30 percent to total output and about two-thirds of the total population is dependant on agriculture for its livelihood. Thailand is one of the world's major food exporters with about three-fourths of its total exports being agricultural; about 25 percent of Thailand's total output is exported. For the past fifteen years, investment has been about 25 percent of GDP so that not only has there been considerable improvement in infrastructure, but the real rate of economic growth has been over 7.0 percent per year.

The population growth rate, over 3 percent during most of the post World War II era, is thought to have declined to about 2.2 percent at present. Thailand, with a currently estimated population of 44 million, is one of the most sparsely populated countries in Asia (86 persons per square kilometre compared to over 500 for Bangladesh).

Perhaps because of the relative abundance of land, programmes to encourage the extensive adoption of high yielding varieties, fertilizer, pesticides, and irrigation use have not been as successful as programmes designed to encourage crop diversification and mechanization. Thus, while rice is still supreme, Thailand has been able to diversify both its agricultural exports and domestic consumption. The demand for both large and small tractors, other farm machinery, ready-mixed livestock feeds, seeds of a wide variety of specialized crops and improved breeds of livestock has increased rapidly. Through the government's efforts to increase agricultural production, agricultural credit through commercial banks has increased 50 fold in the past 3 years.

Thai Education, since the time of King Chulalongkorn, has emphasized achieving a basic level of education for large numbers of people rather than having high levels of education for a few people. Consequently, for the past several years, virtually all students in the relevant age group have been enrolled in lower primary schools (grades 1-4); about half of the relevant population is enrolled in upper primary schools (grades 5-7); about one-third in lower secondary (grades 8-10); about 20 percent in upper secondary (grades 11 and 12); and only 3 percent in higher education. Continuation of the rates of increase of the past ten years in the number of students attending upper primary and secondary schools would mean that virtually all children in Thailand will be receiving 12 years of education by the end of Thailand's fifth five-year plan (1986).

With respect to higher education, Thailand's first university, Chulalongkorn, was established 61 years ago in Bangkok; Thammasat, Kasetsart and Silpakorn universities along with the Ramkhamhaeng (Open Admissions) University, the National Institute of Development Administration, Sri Nakharinwirot University (formerly teachers college), the King Mongkut's Institute of Technology and some private universities have subsequently been established in or near Bangkok. Kasetsart University, Chiengmai University in the north, Khon Kaen University in the northeast, and the Prince of Songkla University in the south are the only universities with Faculties of Agriculture.

The rapid rates of increase in enrollment in primary and secondary schools and the overall educational reorganization currently underway will require more integration between universities and primary and secondary schools. One reason for the increased need for integration is the increasing numbers of students at the upper primary and secondary levels and the increased numbers and specialized training of teachers this will require. A second reason that increased integration will be needed is that in addition to changing to a six year primary and three each lower and upper secondary educational system, the reorganize system will include both basic and vocational or technical education at all levels of primary and secondary education. The new educational system will require a large number of teachers with training in a wide range of relatively specialized fields; whereas, in the past, the vast majority of teachers, with relatively limited specialized training requirements, could be supplied by the teacher training colleges.

Integration Within Higher Educational Institutions

Programmes, designed to achieve integration within higher education to help meet basic food needs, are here classified into three broad categories:

1. those designed to achieve integration among disciplines;
2. those designed to achieve integration among the three major functions of the university — teaching, research and public service; and
3. those designed to achieve integration among colleges and universities.

I. Integration Programmes Among Disciplines

Three major ways in which the exchange of ideas between disciplines occurs are:

1. interdisciplinary research;
2. interaction in the teaching programme; and
3. informal exchanges of ideas.

Interdisciplinary research is the most highly formalized type of integrated programme and we at Kasetsart, as well as the other universities which have faculties of agriculture, have a number of interdisciplinary research programmes involving specific crops (e.g. rice, corn, sorghum, soybeans, etc.), specific farm inputs (e.g. farm machinery, pesticides, fertilizer, seeds, etc.), multiple cropping, regional, and socioeconomic research projects.

A second method of achieving integration among disciplines which I believe is often overlooked, is through the teaching programme. The curricula of the various specialized areas at Kasetsart University attempts to achieve the maximum breadth of education, consistent with the requirements in the specialized areas. This inevitably leads to interaction among staff members in different disciplines in developing course content.

Third, I believe we would be remise if we did not take into account the importance of informal contacts among friends or among people who have common problems or goals in considering means of achieving integrated programmes.

There are several additional ways in which integration among disciplines is achieved such as the service on committees both inside and outside the university of individuals from different disciplines, the annual meetings of the agricultural sciences at Kasetsart University, the annual publication of research progress and findings of all disciplines in the University.

However, there are two points which I like to stress with regard to achieving integration among disciplines. *First,* I believe that in order to not only achieve, but to maintain integration among disciplines over time, it is necessary to institutionalize the means of developing and conducting interdisciplinary research. We have had, at Kasetsart University, a number of examples of support by outside national and international agencies and foundations for interdisciplinary research projects. However, it has been our experience that once this support is exhausted, research is often discontinued when a very little additional effort would yield very considerable results. Therefore, we have been in the process for the past few years of establishing the Kasetsart University Research and Development Institute and the Center for Applied Economic Research through which we hope to institutionalize these coordinated research efforts.

Secondly, we believe, at Kasetsart, that we should stress applied research and that if people are engaged in research attempting to solve "real-world" problems, they are much more likely to seek assistance from people in other disciplines in helping solve the problem than if the research is being done primarily for publication in international journals. We certainly do not discourage such publication and we hope that publication in internationally recognized Scientific Journals will be one of the by-products of any research effort.

II. Integration Programmes Among the University's Three Major Functions

With respect of achieving integration among the teaching, research and public service functions in Thailand, perhaps I should first point out that in Thailand, the research and higher education systems are organized more along the U.S. model, i.e. of having the research and teaching functions primarily in the same institutions rather than the European model, i.e. of having separate research institutes (There are exceptions, as in the U.S., various ministries conduct research in their fields and the Applied Scientific Research Corporation of Thailand conducts research in a number of areas). On the other hand, Agricultural Extension is primarily the function of the Ministry of Agriculture and Cooperatives.

While achieving integration among these functions is not an easy task, the need for teaching materials in the Thai language and the involvement of a large proportion of the staff in research, has encouraged the use of research results in teaching. The requirement of several hours involved in work study programmes by many departments and the hiring of students in assisting in research gives students practical experience in both research and extension outside the classroom and has led to some integration among these functions.

III. Integration Programmes Among Colleges and Universities

In achieving integration *within* higher education, perhaps the most difficult kind of integration to achieve is that among colleges and universities. However, since

Kasetsart is the oldest university in Thailand with a strong agricultural orientation, many of the staff members in agriculturally related disciplines in other universities are graduates of Kasetsart. The informal contacts thus developed has led to consulting on curriculum development and research and even to join research projects. The national professional associations, staff members serving jointly on government committees, staff members teaching at other universities and the occasional transfer of staff members among universities have all tended to further enhance integration among colleges and universities.

Integration Between Higher Education and Other Institutions

Programmes, designed to achieve integration *between* higher education and other institutions to help meet basic food needs, are here classified into three broad categories:

1. those between higher education and government action agencies;
2. those between higher education and farms, households, private and cooperative business firms; and
3. those between higher education and primary and secondary education.

I. Integration Programmes with Government Agencies

Kasetsart has three advantages facilitating the maintenance of integrated programmes with various ministries:

1. the University was originally established by amalgamating the training divisions of the Departments of various ministries and many of the interpersonal relationships have continued;
2. the Ministry of Agriculture and Cooperatives maintains a research station adjacent to the University Campus; and
3. Kasetsart is located within the Metropolitan area of the Capital and highly qualified specialists in various ministries are invited to lecture for individual class sessions and for entire courses.

In addition, universities have in the past been quite dependent on the relevant government agencies for hiring their graduates. This has tended to encourage individual departments of the universities to keep in close contact with the training needs of these government agencies. Perhaps one of the most important ways in which integration between universities and various government agencies is achieved is through the students applying the techniques of research learned in the university to the problems encountered in their various government jobs upon graduation. In this indirect way, I believe that universities have far more influence on the policies and programme of government agencies than is generally recognized or appreciated even by most academicians.

II. Integration Programmes with Primary and Secondary Education

I wish it could be said that universities in Thailand have close working relationships with the primary and secondary school system. However, in the past, the vast majority of teachers were required for teaching at the primary level and these teachers have been supplied primarily by specialized teacher training colleges. Many graduates of general universities which have faculties of agriculture have taught in the vocational agricultural schools; also for the past few years, Thailand has had a programme in which selected primary and secondary teachers have been able to return to the universities to obtain their Bachelor's degrees; other ways in which there have been integrative programmes between universities and primary

and secondary schools include the demonstration schools which most universities have, interrelationships resulting from the fact that nationwide competitive examinations are administered to determine who will enter the universities and selected staff members of the universities have been involved in developing the new comprehensive curriculum.

However, I am more concerned about the relative paucity of integration between higher education and primary and secondary education (partly because I believe it is *very* important) than any of the other areas discussed in this paper.

Conclusions

In closing, I would like to stress three points: *First,* since the total staff and student body of all institutions of higher education in Thailand constitutes less than 0.25 percent of the total population, I believe that in searching for "means and methods of achieving integrated programmes", we must keep very much in mind the *indirect* means of achieving this goal (through the government extension and private mass media network; through primary and secondary school systems; and, through graduates, well-trained in problem-solving research techniques, carrying the techniques learned into their public and private sector jobs).

Second, I believe we are engaged in developing a "superstructure of agriculture" of which higher education is only one but, hopefully, a very important part; this superstructure, integrated within and with farming per se, will meet — or fail to meet — Thailand's basic nutritive needs.

Third, I believe that if each person's goals whether in research, teaching or public service activities, are to strive to solve significant agricultural problems, each of the dimensions of integration outlined above will be achieved.

DISCUSSION

The discussants of the topic "Means and Methods of Achieving Integrated Programmes in Higher Education to Meet Basic Needs for Food" were Dr. Harsja W. Bachtiar, Prof. Chai Hon-Chan, Dr. Peter S.J. Chen, Mr. S.T. Peter Lim, Prof. Dr. Prajudi Atmosudirdjo, Prof. Dr. Amara Raksasataya, Prof. Wu Teh-Yao and Dr. Pradit Cheuychit.

The essence of the discussion is summarized below:

It was made quite clear in the discussions that the problem of food (beginning with the act of production and ending with the act of consumption) involved an entire chain of individuals and organizations. Universities therefore ought to pay more attention to the problem of food production. This should not be confined to relevant departments and faculties alone, but should be a matter of crucial concern of the entire university.

In highlighting a few important points made in the papers, a participant suggested that there were essentially three factual aspects in the area of meeting basic needs pertaining to food. First of all, poor countries as a whole faced the problem of food shortage. Secondly, a part of the solution in solving the problem was adequate and efficient management of the production process. By this was meant the proper management of the whole environment wherein food production including food consumption took place. Thirdly, there was a need to sensitize people to an appreciation of the interdependence between man and his environment.

The problem of food shortage could be tackled by a well-structured educational programme directed at all levels of the educational system of the country. Food shortage was not necessarily a problem *per se* but rather the wastage of food. Coupled with this were the problems of unbalanced diet; over-eating; prejudice; and erring values and beliefs regarding what constituted desirable food. For the general public, particularly students, there was therefore a great need to educate them into the do's and don't's of food consumption. For those involved in the production of food there was a need to increase their understanding regarding the interlocking concerns of food production, viz., land use and management; marketing; environmental protection; and packaging.

In seeking clarification on a few points made in the paper on Thailand, a participant asked to what extent was technical knowledge utilized by farmers in Thailand and the degree of success achieved in utilising technological know-how in food production? In regard to the relationship between the elite and the villagers, after what forms of relationship might the two be linked?

The participant went on to suggest that industrialization took place usually in urban areas and higher education too was in most cases similarly located, with both resulting in urban drift. Food production to a degree was affected adversely. Therefore, one way out was to encourage the siting of industries and institutions of higher learning in rural areas. This could act to enhance food production as these institutions would be intimately woven into the fabric of the entire community and its economy.

Another participant ventured to say that a great deal of useful information on food and its production were not utilised because there was no mechanism or channel for dissemination to interested individuals and groups. RIHED was asked to serve as a centre for pooling, collating, and disseminating such information.

In reacting to the discussion at this point, another participant cautioned the need to look at the problem of food production in a broader perspective, viz., in the context of economics being interdependent wherein those with the greatest relative advantage (assuming the price was right) would tend to optimize that advantage be it growing food or otherwise. On the question of effective dissemination of knowledge concerning food he suggested that academics in particular should write and publish more in order to educate their people on the problem of food. There were therefore specific and general concerns that needed consideration and over-riding both was the political situation in existence.

A comment directed at academics and institutions of higher learning was made by another participant who claimed that research and training in universities were not geared to agricultural production. What were the reasons for this situation? He ventured to suggest two reasons. One was that the reward system in the society was not in favour of the agricultural population. Secondly, there was the problem of the captive mind among local scholars. In reference to the second point he cited the example of India wherein scholars with strong social commitment failed to develop appropriate technology (that is to say, failure to utilize local materials and making local adaptations of machinery invented for farmers). The consequence was that what was produced or invented for farmers were too expensive. The problem as he saw it was really the problem of income distribution, not intrinsically the problem of technology. Hence the issue of social commitment was not necessarily educational but political.

In order to effect a balance, another participant suggested that frequently the problem of food production was compounded by the non-cooperation of the producers — fishermen and farmers. Citing an example from Malaysia, he made the point that when fishermen were asked to cooperate in fishery research by tagging certain fishes, they did not comply. There was a need therefore for some form of legislation which would require cooperation from producers to enhance both conservation of the environment as well as food production. In extension, the participant added that there was great potential in aqua-culture in Southeast Asia because of the archipelagic nature of the land, hence a promising source of food supply. There was therefore a need to train aqua-culturists or develop the science of aqua-culture in the universities. In elaborating, the participant mentioned that there was already a move to develop fishery potential in the region under the *Southeast Asia Fishery Development Agency* (SEAFDA). In addition to this, another organization known as the *South China Sea Development Centre* was actively engaged in fishery survey.

To highlight a practical concern, another participant suggested that the problem of food production could never be completely solved by institutions of higher learning working alone. Based on his own experience he had found that support from various individuals and organizations, particularly the government was important. However, in order to obtain that support, the research worker had to effectively prove his case, that is to say, in terms of the viability (emphasizing price or cost of production) and applicability (emphasizing readiness of acceptance) of his research findings. Institutions of higher learning he felt could play a useful role in assembling all relevant data pertaining to food production locally.

In response, a participant from Thailand remarked that in his university there was already a project on food production which involved co-operation between the university and the government on the one hand and international organizations and private agencies on the other. Among the activities initiated were short courses for farmers and the transfer of intermediate technology to farmers.

To provide a larger perspective of the problem of food, a participant emphasized that there was great need for adequate family planning procedures in order to curb the rising demand for food. Citing Hla Myint, an economist, he said that economic development in Southeast Asia was being fought with one hand tied, that is to say, whatever good effect brought about by development was negated by failure to tackle underlying problems in the society such as unrestricted population growth.

In support of the point made, another participant went on to suggest that tackling the problem of food required a concept that took into consideration many dimensions. It was clear he argued that many of the dimensions were interrelated and interdependent. Food production involved political, administrative, economic and legal procedures. However, he was particularly concerned about the lack of attraction among students for courses of study in agriculture. Society in general also gave little recognition to graduates in agriculture. Indeed there was a degree of prejudice for such courses of study. He wondered if it might be necessary to consider influencing the selection procedures of universities in order to solve this problem. He was of the opinion that universities in his country took in 90 percent of their students from middle class background — people with the knowledge, means and connections. Could not children of farming background be offered opportunities for higher education with a view to their reintegration (after pursuing agricultural studies) in farming activities, hence enhancing food production? In concluding, he suggested that there was a need to study the food habits of people so as to develop correct attitudes toward various types of food particularly those which were available locally.

The problem of food production was frequently exacerbated without proper consideration made of the implications involved. This point was brought to light by a participant who explained that while graduate training in fishery and agriculture was made available to those from rural or agricultural background in his country, yet many did not end up as practitioners in the fields of their specialization. Citing a case in point, he mentioned that trainees of one fishery training programme drifted back to the urban areas in search of other occupations because they could not find the fishery equipment they needed to work with in the rural areas. Furthermore, the income they could get in the rural areas was extremely low, hence resulting in their migration to the urban areas.

Turning to the problem of integrating programmes so as to meet basic needs for food, a participant made the following comments. He thought there was a need to clarify the concept of "integrated programmes". He suggested there were various forms of integration and this was made clear in the papers presented. In particular however, he would like to mention the need for two forms of integration, viz., technical integration and ministerial integration, though both were not exclusive to each other.

In the production of food he stressed 6 problems were involved, viz., the problems of policy regulation, finance, technology, production, security and marketing. Each of these problems involved a different ministry and in order to optimize food production, there was a need to effect efficient integration of both the technical and ministerial aspects of the entire food production process. He cited as an illustration the decline of padi production in Java, the result of a complex of factors among which were: the attitudes of the farmers; the failure of the Ministry of Public Works to maintain proper irrigation; the failure of the Ministry of Home Affairs to provide extension services; and the failure of the Territorial Committee to demarcate and enforce water rights. In addition there was general ignorance of the rules and regulations governing the use and distribution of water. He was of the opinion

therefore, that rice production was not a technological problem, but a problem of proper administration which included efficient marketing and distribution.

An outline of possible research activities was then presented by a participant. In it he proposed that there should be six areas of concern in the area of identifying basic needs for food, viz.,

1. *Food Research and Application* with emphasis on categories of consumable food;
2. *Food Production Research and Application* with emphasis on the mechanics of food production;
3. *Food Price Research, Policy and Application* with emphasis on the economics of food production;
4. *Food Consumption Research* with emphasis on nutrition;
5. *Food Wastage and Harmful Food Habits* with emphasis on development of healthy food habits; and
6. *Propagation and Dissemination* with emphasis on developing awareness regarding food production.

The discussion ended with a clarification by a participant from Singapore arising from a question raised concerning efforts made in Singapore to meet basic food needs. In answering, the participant emphasized the fact that important extension services continue to be provided by the Government in the area of food production particularly through the Primary Production Department. Within the University of Singapore research work were carried out on food production. Programmes of study on food were being offered in the Departments of Zoology, Microbiology and Botany. Nanyang University it was explained further, had also established an experimental farm for staff and students. Finally, the Singapore Institute of Food Science served as an important adjunct to all the research departments doing work on food production.

PART IV

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

There was a complete consensus of view on the need for universities to be fully committed to enhancing the development objectives of their respective societies in the region. Indeed the Seminar felt that universities should do more than the mere training of students to fill vital development roles. Universities ought to inculcate social commitment and responsibility besides directing meaningful involvement among students and staff in meeting social obligations. The traditional functions of the university, viz., teaching, research and public service were re-emphasized. However, there was agreement that they must somehow be part and parcel of the overall structure of social and economic concerns in the society. While universities should be fully socially committed there was also clear recognition of the fact that they should not devitate from the tasks assigned to them, viz., to be centres of academic excellence in learning, teaching, and problem centred research.

Whatever divergence there was in the points of view expressed was in the matter of ascertaining the most efficacious and practical ways and means of engendering social commitment. No doubt this was to be expected as differences of conditions (social, economic, political and educational) between countries determined both perception regarding social commitment as well as development objectives. These differences were clearly brought out in the various papers. In addition to this there were in existence different potentialities (thus opportunities) for social commitment in the countries discussed ranging from the large scale involvement of students in rural development to *ad hoc* unstructured activities in urban areas. However, the main thrust of the Seminar was on finding ways to meet basic needs for food. To be sure, this constituted a commitment expected of all universities in the region. The papers presented and the ensuing discussions revealed that integrated programmes in education to meet this commitment were not lacking, albeit it was concurred that there were rooms for improvement and the efforts need be accelerated.

A good number of recommendations were made at the conclusion of the Seminar. Broadly they were identified in terms of their national or regional relevance and were to be the bases for initiating future activities by regional organizations such as RIHED. In alphabetical order, Indonesia proposed two National and three Regional Projects; Malaysia proposed two National and two Regional Projects; Singapore proposed six National and ten Regional Projects; and Thailand proposed two National and two Regional Projects. The particulars of the proposals are as follows:

Indonesia

I. National

1. Development of a two-year Diploma Course in Rural Community Development for graduates of rural high schools in Indonesia.
2. A study of the extent of knowledge on Problems of the Peasantry as reflected in the curriculum and teaching materials of non-agricultural departments, particularly those in the fields of economics, law, political science, sociology, and psychology.

II. Regional

1. A study of "technocrats" in the region: the interrelationship between performance as members of the university and performance as persons occupying high level positions in the government.

2. Inventorisation and analysis of "social commitment oriented programmes of institutions of higher learning" in the region during the past ten years (1967-1977).
3. Influence of religion on the choice of disciplines of study or branches of profession with academic training.

Malaysia

I. National

1. What is the current state of affairs and what are the constraints on food production?
2. What are the prospective needs for food and what are the implications?

II. Regional

1. Population in relation to food resources.
2. Regional research into coordinated food production and distribution.

Singapore

I. National

1. The Role of University Teachers in Social and Economic Development.
2. Campaigns as means of changing the food habits of a population.
3. Higher Education and Industrialization in Singapore.
4. Towards a balanced education and training in tertiary institutions.
5. How to be and act like a teacher?
6. Higher Education and Social Development in Singapore.

II. Regional

1. Higher Education and Applied Research for Social Planning in Southeast Asia.
2. Developing an Integrated Community-Oriented Programme for Students of Tertiary Institutions.
3. Regional Co-operation in Higher Education in Southeast Asia.
4. Towards a new dimension in the teaching of the humanities and social sciences.
5. Towards academic independence in our institutions of higher learning.
6. Regional transmission of knowledge for agricultural development in Southeast Asia.
7. Socio-economic, biological and political implications of the establishment of 320-km. (200-mile) economic zone in Southeast Asia.
8. Bibliography on fisheries and aquaculture in Southeast Asia.
9. Bibliography on animal nutrition in Southeast Asia.
10. Higher education and health.

Thailand

I. National

1. Relationship between Higher Education Institutions and Government Development Agencies in Various Service Programmes

Objectives:

(a) To identify and define specific roles of various organizations in development.
(b) To smoothen out frictions if there is any.
(c) To further promote closer cooperation.

Scope of Activities:

— Case studies
— Action research on models of cooperation
— Etc.

Expected Outcome:

It is hoped that development is achieved in a more effective and efficient manner.

2. Perception and Attitude of Staff both Academic and Administrative on Social Commitment

Objectives:

(a) To gauge the receptiveness of staff.
(b) To identify measures whereby staff could participate more fully on the philosophy of social commitment.

Scope of Activities:

— Research
— Promotional activities
— Action programmes
— Etc.

Expected Outcome:

It is hoped that higher education staff would have more social awareness.

II. Regional

1. Promotion of Curriculum Development on Man and Ecosystem, and Man and Society

Objectives:

(a) To arouse an awareness of higher education students on the interdependence and the limitation of various resources of the ecosystem and the interdependence of individuals in society.
(b) To stimulate inquiries in young adult members of the society to seek harmonious solutions for the betterment of man, society and natural environment.

Scope of Activities:

— Promotion of the development of a required course in each higher education institution.
— Exchange of ideas through seminars — national and regional — and visitation of key personnel.

— Promotion of research cum work cum study programme as a part of formal curriculum.
— Promotion and dissemination of ideas on the ecosystem and society particularly on urgent problems such as food (production, management, prudent utilization, nutrition, delivery, etc.), health care and population.
— Etc.

Expected Outcome:

It is hoped that in the long run a new breed of scientific humanists and humanistic scientists would be the product of higher education to work in a society with knowledgeable population.

2. Comparative Study on the Roles of Higher Education Towards Social Commitment in Southeast Asia.

Objectives:

(a) To identify various roles of higher education and social commitment.
(b) To compare strengths and weaknesses of various roles.

Scope of Activities:

— Country research — in-depth case studies.
— Evaluation of the effectiveness, the efficiency, the relevance, the flexibility of structure to accommodate innovative activities, etc.
— Country, regional seminars and workshops to improve various on-going programmes.
— Initiation of new programmes.
— Etc.

Expected Outcome:

It is hoped that the philosophy of social commitment aspect would be woven into the activities of higher education along with relevance and excellence.

The Seminar concluded at 1.10 p.m. on Saturday, 17 December, 1977. Prof. Dr. Kasam Chartikavanij delivered the concluding address and then, the Chairman declared the Seminar officially closed.

APPENDIX

PROGRAMME OF THE SEMINAR

Thursday, 15 December 1977

9.00 a.m. — 12.00 noon **Session I**

9.00 a.m. — 9.30 a.m. Welcoming Address by Prof. Dr. S. Nasution, Director of RIHED

Opening Address by Y.B. Dato' Murad bin Mohd. Noor, Chairman of RIHED

Chairman: Prof. Dr. Sippanondha Ketudat

Rapporteur: Dr. Tham Seong Chee

9.30 a.m. — 12.00 noon Paper presented by:

Prof. Dr. Wu Teh-Yao: *The Meaning and Implications of Social Commitment in Higher Education*

Discussants:
1. Prof. Dr. Prajudi Atmosudirdjo
2. Prof. Dr. Chai Hon-Chan
3. Mr. P. Arumainathan
4. Dr. Pradit Cheuychit

General Discussion

1.30 p.m. — 4.30 p.m. **Session II**

Chairman: Prof. Dr. Winarno Surakhmad

Rapporteur: Dr. Tham Seong Chee

Papers presented by:

1. Prof. Dr. Amara Raksasataya: *Socio-economic Needs and Problems: Challenge to Higher Education in Southeast Asia*
2. Prof. Dr. Chai Hon-Chan: *Socio-economic Needs and Problems: Challenge to Higher Education in Malaysia*
3. Dr. Peter S.J. Chen: *Socio-economic Needs and Problems: Challenge to Higher Education in Singapore*

Discussants:
1. Prof. Dr. Harsja W. Bachtiar
2. Encik Zulkifli bin Mohd. Ali
3. Mr. S.T. Peter Lim
4. Dr. Wichit Srisa-an

General Discussion

Friday, 16 December 1977

9.00 a.m. — 12.00 noon **Session III**

Chairman: Prof. Dr. Wu Teh-Yao
Rapporteur: Dr. Tham Seong Chee

Papers presented by:

1. Prof. Dr. Harsja W. Bachtiar: *The University and Society in Indonesia: A Country Report*
2. Dr. Wichit Srisa-an: *Socio-economic Needs and Problems: Challenge to Higher Education in Thailand*

Discussants:
1. Prof. Dr. Winarno Surakhmad
2. Dr. Nayan bin Ariffin
3. Prof. Dr. Wong Poi Kwong
4. Prof. Dr. Kasarn Chartikavanij

1.30 p.m. — 4.30 p.m. **Session IV**

Chairman: Dr. Nayan bin Ariffin

Rapporteur: Dr. Tham Seong Chee

Papers presented by:

1. Dr. Krachang Bhanthumnavin: *Towards the Development of Social Commitment-Oriented Study Programmes in Higher Education To Meet Basic Needs for Food*
2. Dr. Lee Fah Onn: *Means and Methods of Achieving Integrated Programmes in Higher Education in Malaysia to Meet Basic Needs for Food*
3. Encik Zulkifli bin Mohd. Ali: *Means and Methods of Achieving Integrated Programmes in Higher Education in Malaysia to Meet Basic Needs for Food with Special Reference to the School of Biological Sciences, University of Science Malaysia*

Discussants:
1. Prof. Dr. Harsja W. Bachtiar
2. Prof. Dr. Chai Hon-Chan
3. Dr. Peter S.J. Chen
4. Mr. S.T. Peter Lim

General Discussion

Saturday, 17 December 1977

9.00 a.m. — 11.30 a.m. **Session V**

Chairman: Mr. S.T. Peter Lim

Rapporteur: Dr. Tham Seong Chee

Papers presented by:

1. Prof. Andi Hakim Nasoetion: *Means and Methods of Achieving Integrated Programmes in Higher Education in Indonesia to Meet Basic Needs for Food: The Institut Pertanian Bogor as a Case*
2. Prof. Dr. Lim Chong Yah: *Means and Methods of Achieving Integrated Programmes in Higher Education in Singapore to Meet Basic Needs for Food*
3. Prof. Rapee Sagarik: *Higher Education in Thailand: Integrated Programmes for Achieving Basic Nutritive Needs*

Discussants:
1. Prof. Dr. Prajudi Atmosudirdjo
2. Prof. Dr. Amara Raksasataya
3. Prof. Dr. Wu Teh-Yao
4. Dr. Pradit Cheuychit

General Discussion

11.45 a.m. — 1.10 p.m. **Session VI**

Chairman: Prof. Dr. S. Nasution

Rapporteur: Dr. Tham Seong Chee

Conclusions and Recommendations

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